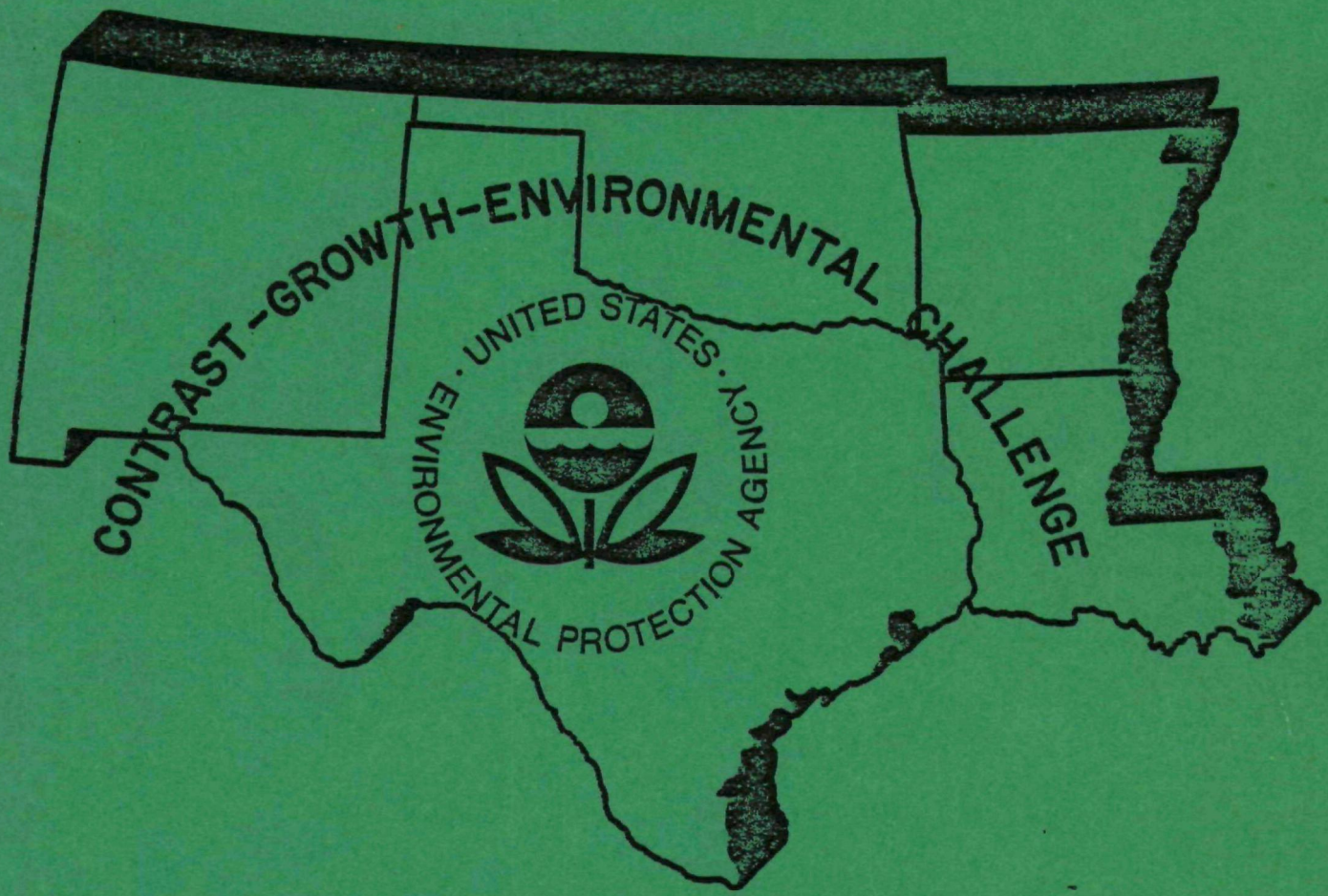
ENVIRONMENTAL MANAGEMENT REPORT



EPA REGION 6
DALLAS, TEXAS

MAY 1983

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

MEMORANDUM

DATE: September 27, 1985

SUBJECT: FY85 Environmental Management Report (EMR)

FROM: Jim Stiebing, EMR Coordinator

TO: Addressees

Attached is the final FY85 EMR with a copy of the current distribution list. If you receive any requests for the EMR please refer them to me for response. As you know the EMR is an internal document but, like much of our internal information, it is available to the public upon request.

Addressees
D. Whittington (6A)
F. Phillips (6D) ✓
A. Davis (6AW)
J. Floeter (6M)
M. Knudson (6W)
R. Rhoades (6ES)
P. Seals (60RC)
P. Charles (60PA)
B. Williamson (60CL)
B. Goetz (60CL)

Attachments

Region 6

(Distribution of 1985 EMR)

Name	*Copy
EPA Personnel	
D. Whittington (6A)	1
F. Phillips (6D)	2
A. Davis (6AW)	3
J. Floeter (6M)	4
M. Knudson (6W)	5
R. Rhoades (6ES)	6
P. Seals (6ORC)	7
P. Charles (6OPA)	8
B. Williamson (6OCL)	9
B. Goetz (6OCL)	10
State Personnel	
W. J. Molie	11
Denver T. Lope	12
L. S. Pope	13
Zerle L. Carpenter	14
Jack D. Craig	15
Jim Hightower	16
Denise Fort	17
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Buddy Temple	19
Charles Nemir	20
Sandra L. Robinson	21
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Jim Porter	24
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James Barnett	32
Joan K. Leavitt	33
John Townsend	34
Leonard Soloman	35
Melvin C. Tucker	36
Robert F. Odom	37

*copy number on ~~manual~~ report

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1201 ELM STREET
DALLAS, TEXAS 75270

September 23, 1985

To: State Personnel

The 1985 Environmental Management Report (EMR) for Region 6 has been completed and submitted to the Administrator. As you know, the EMRs from all of the regions are used to set agency priorities and to guide the program offices in headquarters. They are an important part of the agency planning process and I want to share the Region 6 EMR with you.

The EMR is an internal management document and we have made a limited number of copies for distribution to those who participated in its preparation. Requests for the EMR from the public will be honored as are all such requests for agency information. Although we have no objection to your copying all or part of the EMR, we would appreciate your referring any request from the public for copies to us for response.

We had good participation in the EMR preparation from State agencies in Region 6 this year. I want to thank you for this support from you and your staff.

Sincerely yours,

Frances E. Phillips

Dick Whittington, P.E.
Regional Administrator

Enclosure

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EPA REGION 6

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Executive Summary

Introduction

The five States in Region 6...Arkansas, Louisiana, New Mexico, Oklahoma and Texas...lie in the heart of the "Sunbelt". Growth of population and and industrial activity throughout the Region have been tremendous, increasing the pressures on the environment in virtually every area.

The Region features many contrasts, including coastal wetlands and arid deserts, large cities and vast rangelands, industrial concentrations and fertile farmlands. The Region covers an area of more than 500,000 square miles and includes two of the five largest States in the union. More than 25 million people live in the Region, with a population increase of 50 percent expected by the year 2000.

The States in the Region produce about 55 percent of the nation's oil and 85 percent of the nation's natural gas. In 1981, Outer Continental Shelf, or offshore, oil and gas production in the Region accounted for 96 and 99.8 percent respectively of the national offshore production.

Manufacturing growth continues on the upswing in the Region, while commercial and sports fishing are major industries throughout the Region.

Delegation to States

Congress provided in most of the major environmental laws for a strong State-Federal partnership built around delegation of the implementation of environmental programs at the State, rather than the national, level.

Delegation of environmental programs has been given top priority by the Reagan Administration. Nationally, in the last 20 months, the delegation of program responsibility to State environmental agencies increased from 33 percent to 55 percent. In Region 6, during the last 16 months, delegation increased from 35 percent to 76 percent. The States in Region 6 have become national leaders in assuming these responsibilities.

Air Program

Most of Region 6 is currently classified either as "in attainment" of the National Ambient Air Quality Standards or as "unclassified" because of insufficient monitoring data.

There were 64 areas designated as "non-attainment" areas in 1978, including 32 for ozone, 27 for total suspended particulates, 3 for carbon monoxide and 4 for sulfur dioxide. Some areas are designated as non-attainment for more than one pollutant. We believe that most of these areas are now in attainment with about a dozen remaining in violation of the standards.

During 1981, 21 counties and parishes in the Region showed measured values over the alert level for at least one of the national standards. However, 18 of those were over the alert level only once. An additional 21 counties/parishes showed measured values over the primary standard for at least one standard, of which 16 were above the standard only once.

Reductions in emissions of pollutants has been achieved through implementation of control strategies in the States' Implementation Plans, or SIPs, and through vigorous enforcement actions against sources not complying with State or Federal clean air regulations. Regulations which became effective in December 1982 are expected to bring further air quality improvements during 1983.

Ozone is the major air quality problem in the Region, impacting Houston, Dallas, Fort Worth and El Paso, Texas; New Orleans and Baton Rouge, Louisiana; Tulsa, Oklahoma and rural non-attainment areas. Other air problems are Carbon Monoxide in El Paso, Texas and Albuquerque, New Mexico; Total Suspended Particulates in Harris, El Paso, Cameron and Nueces Counties in Texas and Bernalillo and Grant Counties in New Mexico. A major barrier for reducing the ozone problem in El Paso is the uncertainty about the amount of ozoneproducing emissions crossing the border from Juarez, Mexico.

Water Program

Despite the steady growth, the overall surface water quality of the Region has remained constant or improved, with a few exceptions. The major tools for improving water quality are the Construction Grants and National Pollutant Discharge Elimination System programs.

Since 1956, 4,769 construction grants totaling more than $2.7 billion in Federal funds have been awarded in the States of Region 6. This includes 1,877 grants under Public Law 84-660 totaling nearly $621 million and 2,892 grants totaling over $2 billion under Public Law 92-500.

Many of the more recently awarded projects are still underway but the program has led to construction of nearly 1,900 treatment plants, as well as other treatment works such as major interceptors, sludge handling facilities and lift stations.

A total of 6,686 permits have been issued in the Region since the NPDES program began, including 1,938 to municipalities, of which 364 are classified as major dischargers, and 4,748 non-municipal, of which 461 are classified as major. Region 6 has begun issuance of "second-round" NPDES permits, giving first priority to facilities discharging to waters where use impairment problems have been identified and where there is adequate information to issue permits based on either water quality or on best professional judgment.

The organic chemicals and plastics/synthetics industrial category, where major water quality problems have been identified, falls into this priority category. Dischargers to the Lower Mississippi River, the Houston Ship Channel and the Neches and Sabine Rivers have been designated to be in the water use impairment category. This means that generally facilities discharging into these waterways can expect to have their permits reissued within the next year and a half.

The major water quality problems result from the impact of increased population on municipal wastewater treatment plants and the increased industrial development on wasteloads being borne by the surface waters.

In Arkansas, it is estimated that 4,087 miles of the 6239 miles of major streams will meet fishable/swimmable standards. In Louisiana, 92 of the 113 stream segments are classified as effluent limited and 21 as water quality limited. A total of 18 segments are classed as severely polluted. In New Mexico, water quality is consistent with standards in more than 90 percent of the estimated 3,500 miles of perennial streams. In Oklahoma, there are 23,000 miles of streams and 663,000 acres of major reservoirs, with much of this water of poor quality due to natural mineralization. Texas has 16,115 miles of major streams divided into 311 stream and coastal segments. Of these, 242 segments meet applicable stream standards or are projected to do so soon, with the remaining 69 segments considered to be polluted.

Drinking Water Program

There are 15,649 public water systems in the Region, of which 8,011 are community systems serving an estimated 23.8 million people and 7,638 non-community systems serving the traveling public.

While most of these systems rely on groundwater for their major source of water, the larger community systems serving almost two-thirds of the resident population rely on surface water sources.

Tne water supply program has been delegated to all five States in the Region. The latest evaluation of these programs by the Region show positive compliance trends in both water quality and monitoring. They also show a need for continued surveillance activities to maintain compliance levels.

The majority of the bacteriological and turbidity violations occur in small public systems. Even so, compliance with bacteriological and chemical quality is at or about 90 percent throughout the Region.

Operation and maintenance problems are the major obstacles to compliance. These are being addressed through operator training programs and by technical assistance visits by State engineers.

Concerns for surface water quality in the lower Mississippi, Lake Houston, Beaver Lake, the Lower Rio Grande, Caddo Lake and other waters used for drinking water supplies emphasize a need for continuing efforts to protect surface water sources.

Groundwater sources too are threatened by potential degradation from hazardous waste sites; industrial pits, ponds and lagoons; landfills, injection wells and other activities which place wastes below ground level. Although all aquifers have been subjected to limited incidents of contamination, the general groundwater quality in the Region is good.

Toxic Substances Program

TSCA requires the Administrator to utilize all laws administered by EPA when dealing with any chemical substance. Therefore, coordination is an essential responsibility in the toxics program.

One of the major parts of the toxic substances program deals with threat of asbestos-containing materials in schools. The regulation requires all public and private elementary and secondary schools to identify friable asbestos-containing materials and notify employees and parents of its presence. All Region 6 States have active programs underway to comply with the regulation. At this time, all schools in Oklahoma, 98 percent of the schools in Arkansas, 73 percent of the schools in Louisiana and New Mexico and 67 percent of the schools in Texas have been surveyed.

The Toxics Program also directs the PCB enforcement strategy in the Region. This strategy is designed to reduce the risk of spills while PCBs are in service and to ensure that they are disposed of in a proper manner when they are removed from service.

Another major current activity in the toxics program is the study of lead in soil and its impact on children around secondary smelters in Dallas, Texas and around a primary smelter in Bartlesville, Oklahoma.

A definitive study in Dallas resulted in a program for protecting pre-school children from exposure. The Dallas study is being used in discussions with the Oklahoma State Department of Health on addressing the Bartlesville problem.

Superfund Program

Region 6 is moving aggressively to implement the Superfund program.

There are 25 sites in the Region on the National Priority List including eight in Texas, seven in Arkansas, four each in Louisiana and New Mexico and two in Oklahoma. In most cases, the States are taking the lead in the investigation and feasibility studies at these sites. In addition, we have completed immediate removal actions at six sites and planned removals at two. We have enforcement actions under the Superfund program underway at 11 sites and have notified potentially responsible parties at nine others. Enforcement actions, including notice to potentially responsible parties, are underway at eight sites not on the national priority list.

The major problem in the program at this time is the lack of State resources in Arkansas and New Mexico to meet the 10 percent State matching requirement of the Superfund program. Both States have requests before their legislatures for funds to resolve the problem. None of the five States have funds for the administrative costs of the program. This lack of funds has led to some delays in the early stages of the program throughout the Region.

Hazardous Waste Program

Responding to the initial notification requirement, 5,243 facilities qualified for interim status in the Region by November 1980. In addition, 8,888 persons notified as generators of hazardous waste and 1,536 notified as transporters. By November 1982, the number of facilities with interim status had fallen to 1,038, a 71 percent decrease resulting from determination that some notifiers were not handling hazardous waste and from some operators ceasing the handling of hazardous waste. By November 1982, the number of generators had dropped to 7,152, a 20 percent decrease, while the number of transporters had increased to 1,582, a four percent increase.

A major problem for the program is the lack of sufficient data concerning such questions as the number of existing and future facilities. This need is being realized as the program develops and the data base is being enlarged as rapidly as possible.

A second problem area revolves around the speed with which the program has been implemented, the extensive revisions of the regulations since their first publication in May of 1980 and the confusion existing not only within the regulated community but also in the Federal and State agencies concerning applicability of the rules and methods by which a facility can achieve compliance.

An aggressive education and training of both facility and Agency personnel is needed. Industry has begun educating and training their personnel through trade organizations, but the Federal and State training activity is lagging.

The involvement of the public in permitting facilities and the general public resistance to siting hazardous waste facilities are problems that will be encountered as the program develops.

Pesticides Program

The pesticide enforcement program has been delegated to all five States. Currently, EPA provides up to 85 percent of the funding for the States to conduct the program. Training is also provided to State personnel in investigative techniques, case preparation and analytical techniques.

A problem found in all five States is the drift of herbicides from the target site to adjacent areas. Arkansas is addressing the problem through pre-season inspections of commercial applicators to caution about the dangers of careless application. Louisiana is seeking tighter legislation to control the problem. New Mexico uses a system of performance evaluations and training to reduce the number of incidents. Oklahoma is making public announcements of operator suspensions and revocations. Texas is recertifying aerial applicators and proposing new regulations to limit certain pesticides to certified operators.

New Mexico and Oklahoma have also reported problems from careless use of pesticides by pest control operators in homes and are addressing the problem by similar techniques to those covering drift.

The imported fire ant infests more than 91 million acres in Texas, Louisiana and Arkansas. While there are registered pesticides to control this pest in residential, recreation and institutional areas and pastureland, there is no product registered for aerial application to cropland since cancellation of Mirex by EPA in 1977. An application for registration of Amdro, including aerial application to cropland is pending.

Radiation Program

Primary responsibility for protection of the public from release of radiation from nuclear facilities rests with State and local governments. The Federal Emergency Management Agency, the Nuclear Regulatory Commission and the Department of Energy also have responsibilities in emergency response and monitoring activities.

EPA can become involved through assignments under the Interagency Radiological Assistance Plan or under its independent authority, including assistance to State and local governments in monitoring, evaluation and in reaching decisions on protective steps to be taken.

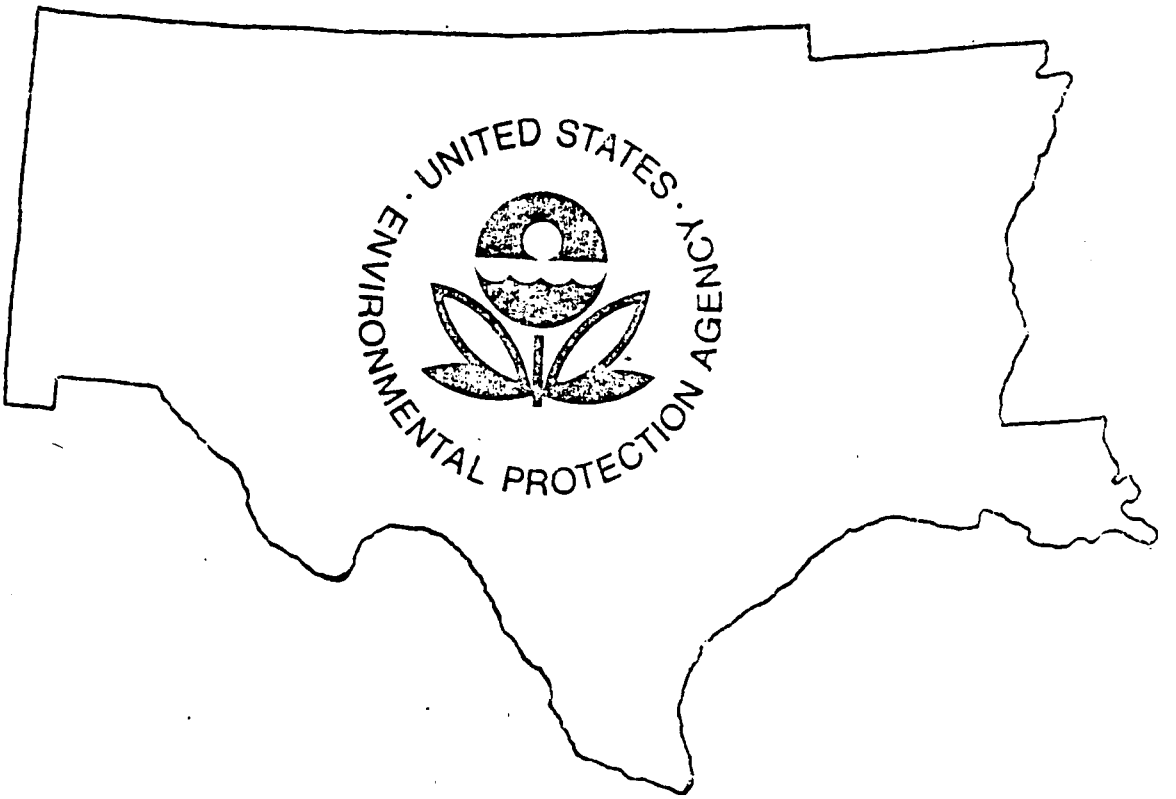
Extensive uranium mining activities have been conducted in the Region, chiefly in New Mexico and Texas. These activities have not been tightly regulated, and EPA is presently engaged in assessing the environmental impact that results.

About a dozen uranium mills have operated in the Region. About half of them are presently closed with the others generally operating at less than capacity.

EPA has set standards for the cleanup and disposal of tailings from inactive mills, and the Department of Energy is presently planning and performing remedial activities.

Standards for active mills are expected to be set later this year.

A pilot study to determine the significance of radon and radon daughters concentrations in living areas as a result of energy conservation effort which reduce the air change rate is being conducted in New Mexico. The study is expected to contribute to determination of what, if any, corrective actions are needed.



Region 6

The five states in Region 6 -- Arkansas, Louisiana, New Mexico, Oklahoma, and Texas -- lie in the very heart of the "Sunbelt". The contrasts in Region 6 are many: coastal wetlands and arid deserts; large cities and vast rangelands; industrial centers and fertile farmlands. Region 6 covers an area of over 560,000 square miles and includes two of the five largest states in the Union. Its land mass lies within four of the world's five climatic zones and includes land areas from below sea level in southern Louisiana to over 13,000 feet above sea level in New Mexico. Availability of water in Region 6 varies, with average annual rainfall ranging from less than 8 inches to more than 55 inches. Region 6 includes over 11,000 miles of tidal shoreline along the Gulf of Mexico.

Over 25 million people reside in Region 6, but about half of those live in the largest fourteen standard metropolitan statistical areas (SMSA). By the year 2000, the population here is projected to increase by 50 percent over the 1970 population. Region 6 includes three of the ten largest cities as well as two of the fifteen largest SMSA's in the U.S. Population density varies from 88 people per square mile in Louisiana to 11 people per square mile in New Mexico. The population of Region 6 is growing at

a rate over twice that of the U.S. as a whole and most of the population increase is occurring in urban areas.

Region 6 has a broad cultural heritage and contains about one-fourth of the Nation's Indian and Hispanic population. Of the tribal and trust allotted land under the jurisdiction of the Bureau of Indian Affairs, over 15 percent is located in Region 6. A unique feature of Region 6 is a 1200 mile border with Mexico's most densely populated northern region. The boundary separates nations with great economic disparity.

Region 6 has been and continues to be in the forefront of energy development in the U.S. The states in Region 6 produce about 55 percent of the Nation's oil and 85 percent of the Nation's natural gas. From 1954 to 1980, over 17,500 oil and gas wells were drilled in the Outer Continental Shelf (OCS) in the Gulf of Mexico off of Region 6. In 1981, OCS oil and gas production in Region 6 accounted for 94 percent and 99.8 percent, respectively, of the the national OCS production. Over 40 percent of the Nation's total mineral production revenue comes from Region 6. In addition, about 45 percent of the Nation's uranium reserves, 10 percent of the coal reserves, and 15 percent of the lignite reserves occur in Region 6.

Energy production in the Region generates many associated activities. These include the petrochemical and refining industries, which account for about 70 percent and 40 percent of the U.S. production, respectively.

The States in Region 6 also consume a great amount of energy -- over 18 percent of the consumption in the U.S. as a whole. Shipping is another important industry that is tied to energy and industrial development in Region 6. A number of large ports are located along the Gulf Coast, including one of the largest ports in the world at New Orleans.

Although energy related development draws the most attention, Region 6 counts on a number of other major industries including agriculture, construction, commercial fishing, manufacturing and tourism. Each of the states in Region 6 has important agricultural lands. Over 23 percent of the farmland and 11 percent of the timberland in the Nation is found in the Region. Principal commodities are quite varied and include cattle, poultry, cotton, soybeans, rice, dairy products, sweet potatoes, and citrus fruits. However, agricultural land is disappearing in many areas of the Region because of the increasing land requirements for energy development and increased urbanization. Agricultural lands will also feel the pinch as growth causes increased demand for agricultural commodities and construction materials.

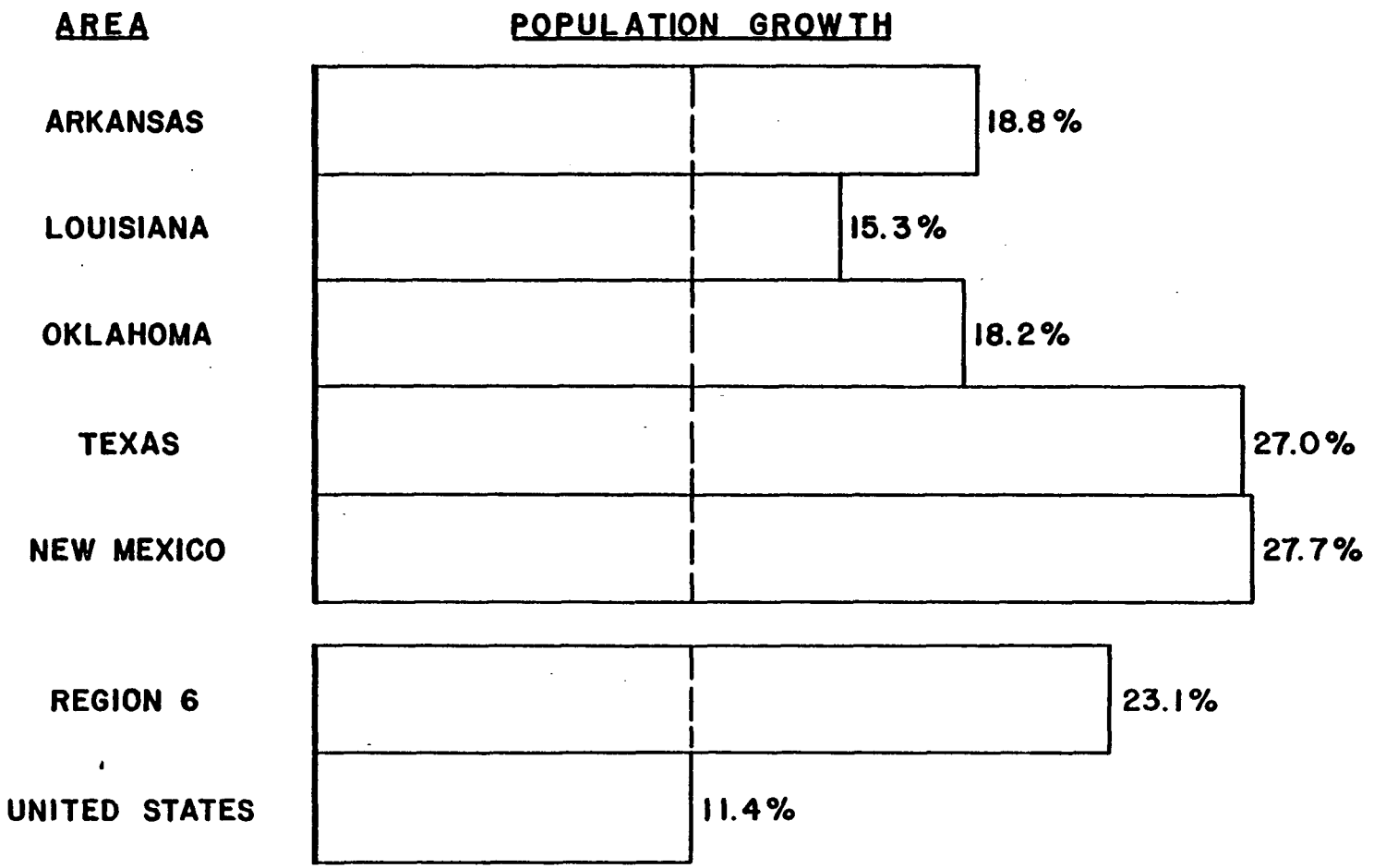
While manufacturing growth in many parts of the U.S. has been slowing, manufacturing in Region 6 is on the upswing. The largest growth industry is chemical and allied products although other industries such as non-electrical machinery, fabricated metals, electrical machinery, primary

metals, and electronics are also strong.

Commercial fishing is an important industry along the Gulf Coast. Sport fishing is popular there as well as in freshwater lakes and streams throughout the Region. Recreation and tourism, often focusing on the diverse and scenic environment, provide additional economic benefits for many local areas. Recreational opportunities are as diverse in Region 6 as they are anywhere in the country and many depend on the maintenance of the quality of our outdoor environment.

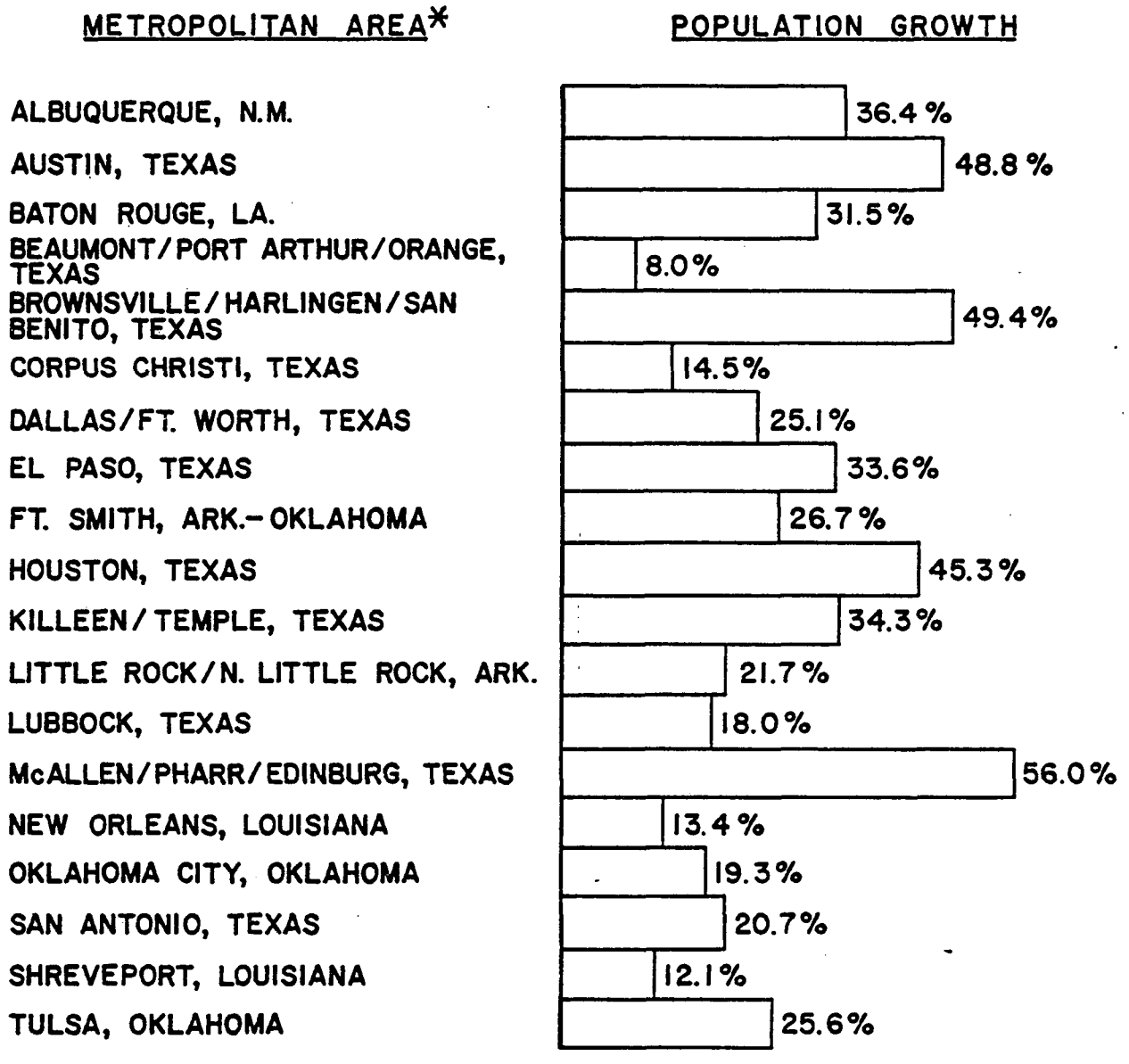
The U.S. Environmental Protection Agency in Region 6 has made and continues to make great efforts to attain and maintain environmental quality in the area under its jurisdiction. We have made considerable progress in many areas, but we still have our work cut out to maintain environmental quality and to make improvements in areas where meaningful environmental gains are possible. A large part of our challenge is that our attractive position in the the heart of the "Sunbelt" makes us vulnerable to the environmental problems that so often are associated with growth and development. We must strive to use our resources to protect the environment and human health where they will be most effective. Further, we must accomplish these goals without unnecessary restrictions on economic activity.

REGION 6
POPULATION GROWTH
1970 – 1980



Modified from: Statistical Abstracts of the U.S. 1981

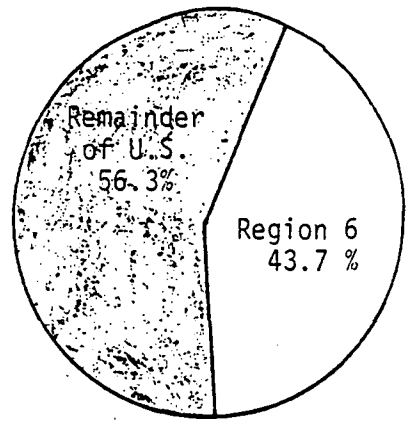
REGION 6
METROPOLITAN GROWTH
1970 – 1980



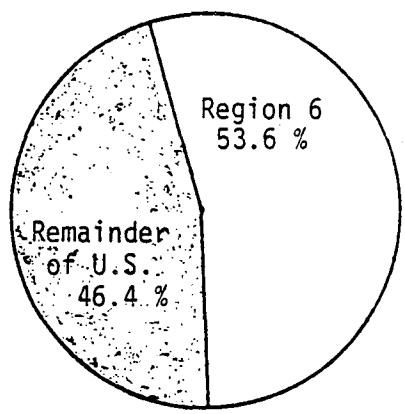
* Includes metropolitan areas of 200,000 people or more
Source: Statistical Abstracts of the U.S. 1981

REGION 6

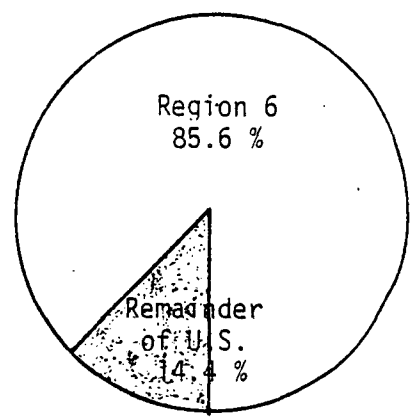
MINERAL PRODUCTION



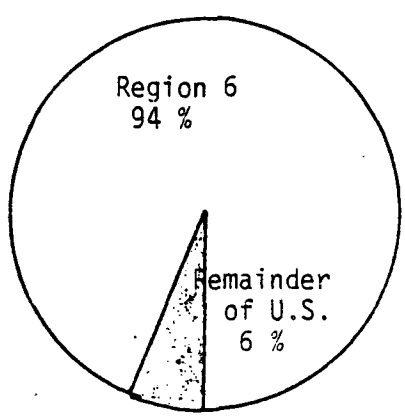
Value of Mineral Production
1979



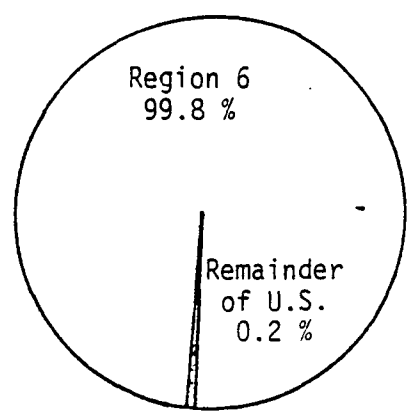
Crude Oil Production
1980



Natural Gas Production
1980



OCS Oil Production
1981

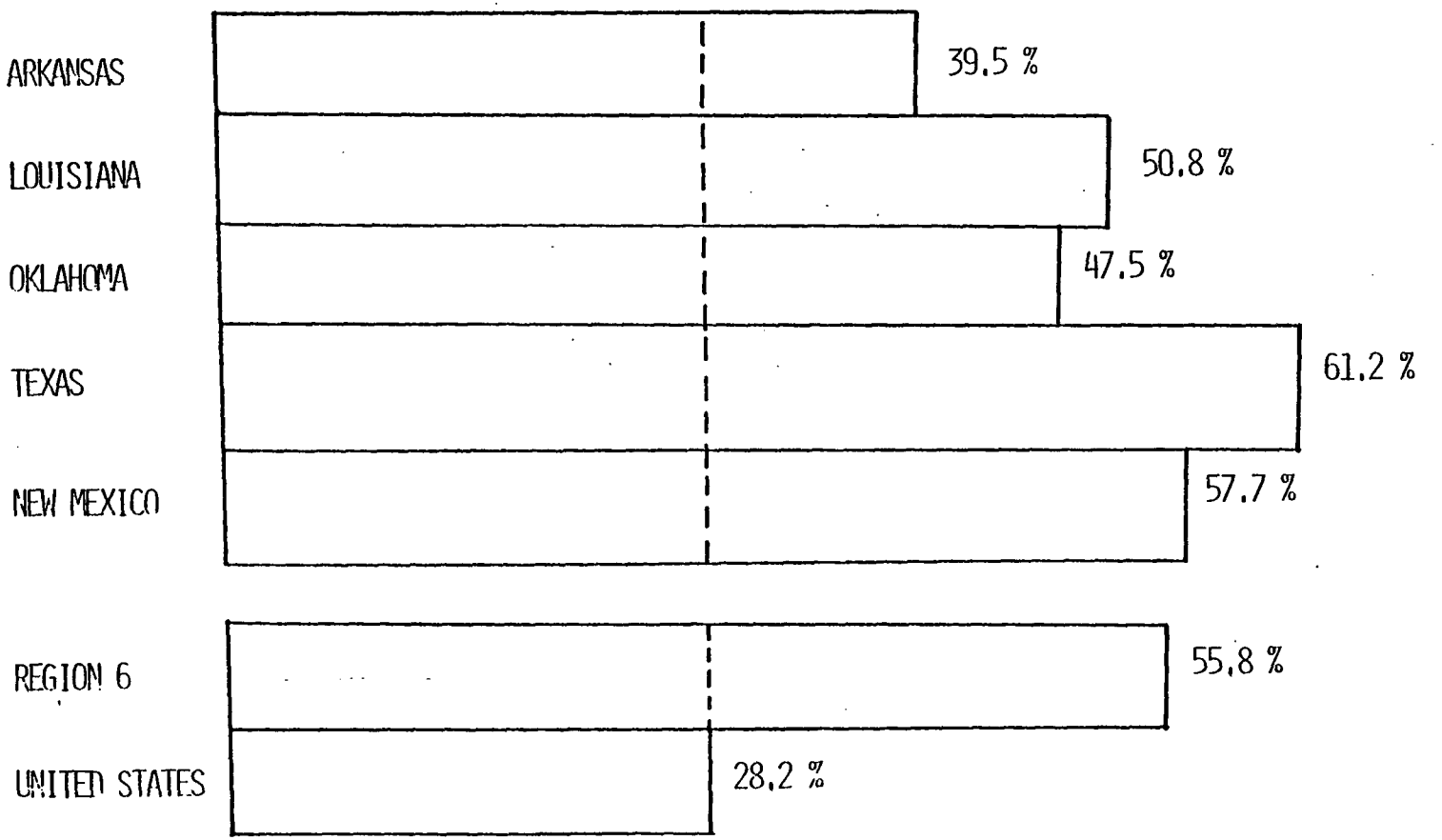


OCS Natural Gas Production
1981

REGION 6

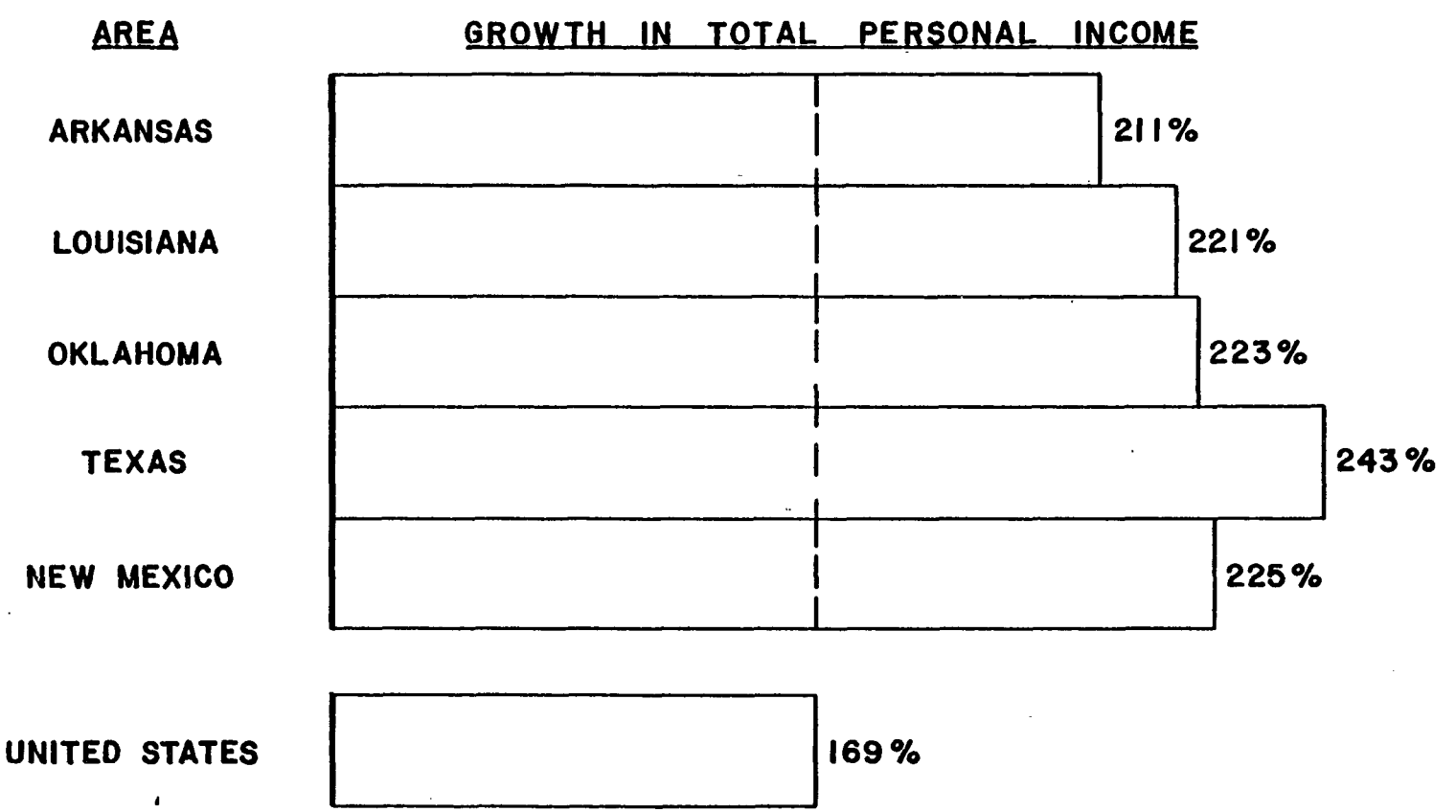
GROWTH IN NONAGRICULTRAL EMPLOYMENT

1970 - 1980

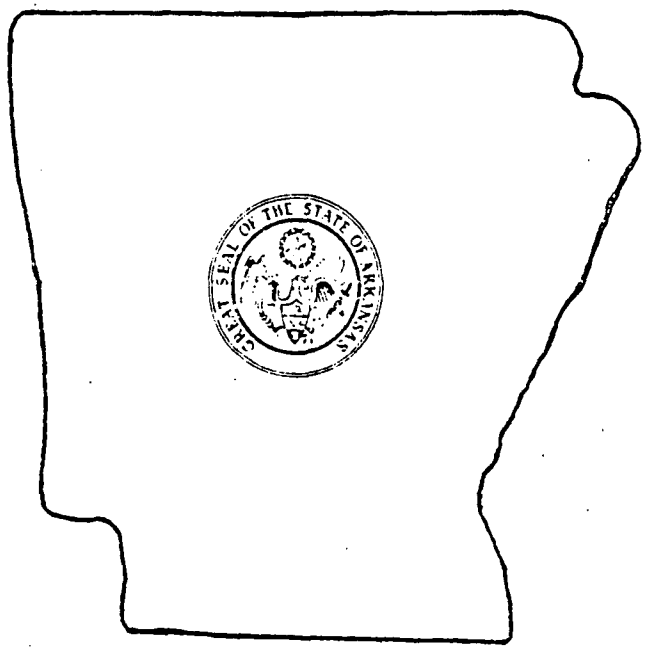


Modified from : Statistical Abstracts of the U.S., 1972 and 1981

REGION 6
GROWTH IN TOTAL PERSONAL INCOME
1970 – 1980



Modified from: Survey of Current Business – June 1981



ARKANSAS

Arkansas is a beautiful land of mountains and valleys, thick forests and fertile plains. It is known as the "Land of Opportunity" because of its many factories, farmland, and rich natural resources. Perhaps because of its location in the fast growing "Sunbelt", it is becoming a land of opportunity more today then ever before.

The population in Arkansas increased almost 19 percent from 1970 to 1980 to a total of over 2.25 million people. As with other states in the Region, Arkansas's population is shifting from rural to urban areas. Many people are migrating to Arkansas from northern states in increasing numbers. Many people visit Arkansas every year as well. About 25 million people are attracted to the mineral and non-mineral hot springs, the diamond hunting opportunities, and to a variety of fishing, hunting, and camping activities.

Springs are especially plentiful in Arkansas. Thousands of people visit some of the State's springs every year in hopes that the waters will relieve certain physical ailments. Mammoth Spring in the Ozark Mountains is one of the largest springs in the world.

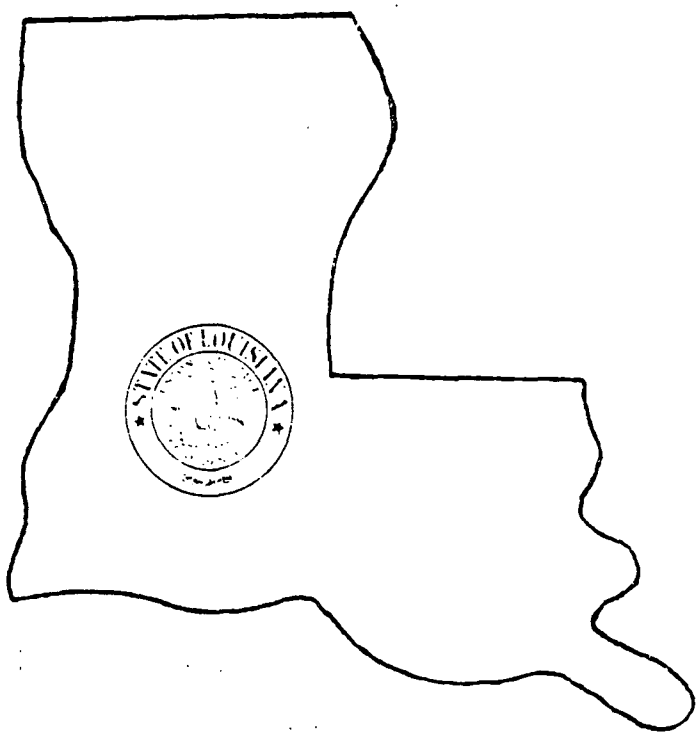
Arkansas has a warm, rainy climate with warm to hot summers and cool winters. Yearly precipitation ranges from about 40 inches in the mountainous northwest to about 55 inches in the western and west-central parts of the State.

Arkansas is a leader in many areas of mineral and energy development. The State produces about 85 percent of the Nation's bauxite, a mineral used in making aluminum, and also leads the nation in the production of bromine and vanadium. Rich deposits of petroleum coal and natural gas can be found in parts of Arkansas, often beneath fertile farm and timberlands. Other important minerals produced in the State include barite, clays, and natural abrasives.

The Mississippi River forms the eastern border of Arkansas. An elaborate navigation system constructed along the Arkansas River allows boats to travel from its mouth at the Mississippi all the way to Tulsa, Oklahoma. This provides a critical transportation line to the Gulf of Mexico for Arkansas and Oklahoma.

Agriculture also plays a very important role in the Arkansas economy. Not only does the State produce one-third of the Nation's rice -- more than any other state -- but it also ranks among the leading producers of soybeans, cotton and poultry. Arkansas leads the Nation in the production of chicken broilers. Many of Arkansas's major crops are grown in the alluvial plain along the Mississippi River. Timber development is also important in Arkansas where forests cover 55 percent of the State.

The Little Rock - North Little Rock area is Arkansas's most important manufacturing center. Important industries include food products, electric and electronic equipment, and lumber and wood products.



LOUISIANA

Louisiana, the "Bayou State", is characterized by bountiful natural resources and a richly diverse cultural heritage. Perhaps more than any other factor, water has been one of the driving forces behind Louisiana's history of growth. The numerous rivers, bayous, creeks, lakes, marshes, and bays have contributed to the State's unique personality, as well as its economic growth.

Louisiana is a growing "Sunbelt" state -- with a current population of almost four and a quarter million. The annual growth rate is 21 percent higher than that of the U.S. About two-thirds of the population lives in urban areas and almost one-half live in the metropolitan areas of New Orleans, Baton Rouge, and Shreveport.

Millions of tourists visit Louisiana each year to see the old French and Spanish sections of New Orleans and the stately plantations of old Louisiana families. Hunters come to shoot ducks and geese, while other sportsmen pursue fresh and salt water fishing.

Most of the State has a hot, humid, subtropical climate. It is one of the wettest states, with a yearly average of 56 inches of precipitation.

In addition, since 1975, about 30 hurricanes and 55 lesser tropical storms have battered its shores.

The mighty Mississippi River, the "father of waters", gathers momentum along its 2,300 mile course and becomes a half-mile wide on its course through Louisiana where it empties 300 billion gallons of water daily into the Gulf of Mexico. New Orleans, the State's largest city, is situated along the River and ranks among the world's busiest ports. Ocean ships can travel about 250 miles up the River to Baton Rouge, the State capital.

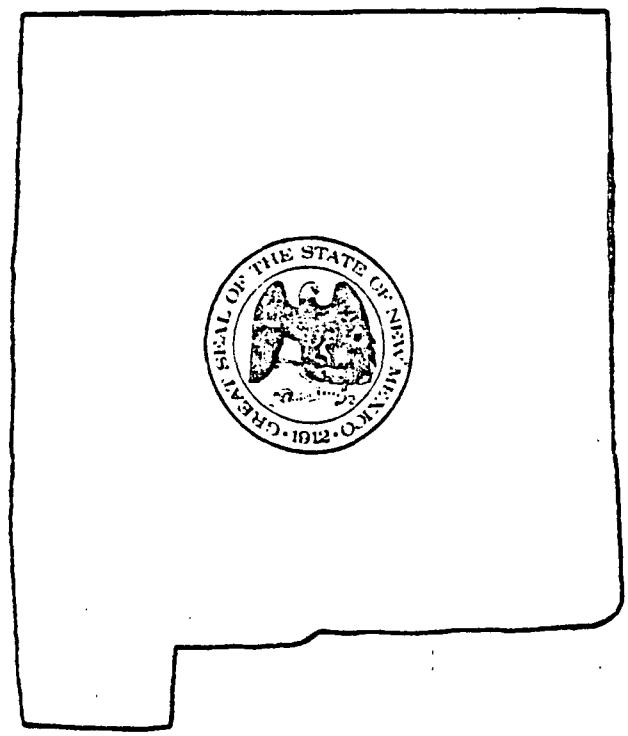
Louisiana has a tidal shoreline of bays, offshore islands, and river mouths measuring 7,721 miles. Among the states, only Alaska and Florida have longer tidal shorelines. Vast areas of important wetlands occur in the coastal zone of Louisiana as well as in other parts of the State.

Louisiana leads the Nation in natural gas production and ranks second in oil production. Between 1954 and 1980, over 15,800 oil and gas wells were drilled in the Louisiana Outer Continental Shelf (OCS). However, production of natural gas has declined since 1974 and production of oil has declined since 1971. Louisiana has some 39,000 miles of natural gas and oil pipelines that extend through every part of the State and more than 100 miles offshore. The first phase of the Louisiana Superport is now in operation; supertankers are unloading crude at offshore terminals to pipelines that feed refineries in Louisiana, the Midwest, and East. Also, there are significant deposits of lignite throughout the northwest portion of the State.

Louisiana is also a major source of several nonfuel minerals. The State leads the Nation in salt production and ranks second in sulfur mining. With a yearly catch valued at about $138 million, Louisiana is a leader among the states in commercial fishing. The State also ranks foremost in the production of fur from wild animals.

Rich alluvial soil covers about a third of Louisiana. Few regions of the world have so large a proportion of fertile farmland. The State's 34,500 farms, plantations, and ranches cover about 10 million acres. About a fourth of the State's cash farm income is produced from soybean crops. Louisiana ranks among the Nation's leaders in the production of cotton and rice and nearly 20 percent of all the sugar cane grown in the U.S. is raised in Louisiana.

Manufacturing in Louisiana is becoming more diversified. Petroleum, chemicals, food products, metals and machinery, paper, transportation equipment, lumber and wood, and electronics provide the base for a rich and expanding industrial complex.



NEW MEXICO

New Mexico is a rugged state with mountain ranges, canyons, and rocky deserts covering much of its expanse. The State is the fifth largest in area in the U.S., but it is very thinly populated. New Mexico is known as the "Land of Enchantment" because of its scenic beauty and rich history.

Although still sparsely populated, New Mexico is growing rapidly because of its position in the "Sunbelt". The 1980 population of almost 1.3 million represents an increase of about 28 percent over the 1970 population. Although urban areas constitute less than 1 percent of the State's total land area, over 70 percent of the New Mexico population resides in those areas. The State is also very attractive to tourists who go there for sightseeing, skiing, hunting, fishing, and camping.

New Mexico has a diverse cultural heritage. Most of today's residents are descended from one of three major groups that settled the area: Indians, Hispanics, and Anglos. Almost 18 percent of the Indian trust allotted and tribal land in the U.S. is located in New Mexico. The Federal government owns or reserves about a third of the land in New Mexico. National forests, defense installations, energy operations, and Indian reservations take up most of this area.

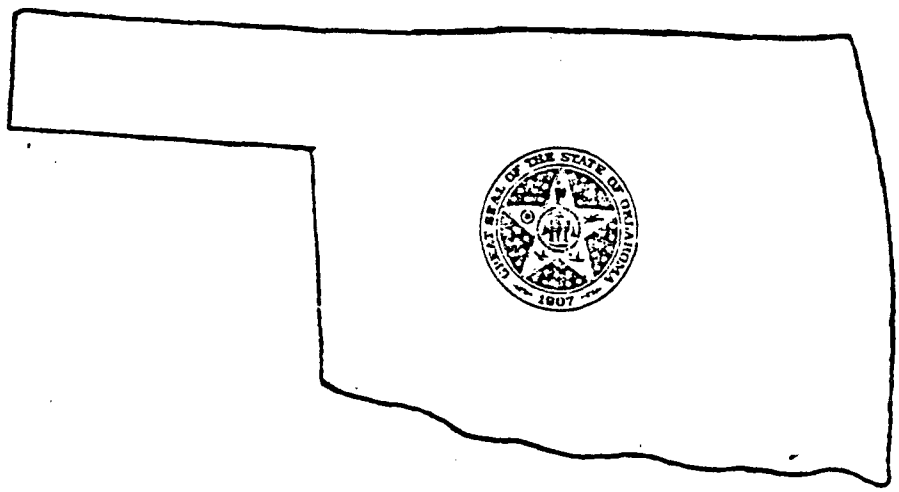
New Mexico has a dry climate. Precipitation ranges from over 20 inches -- much of which is from snow -- in the northern mountains to less than 10 inches in the south. The mountain areas, which attract the snow skiers, may get as much as 300 inches of snow a year. Temperatures may vary widely across the State with generally warm summers and cool to cold winters.

Historically, New Mexico has depended upon farming, ranching, and mineral production as the bases for its economy. Presently, other sectors of the economy -- including recreation/tourism, government at all levels, and retail trade and services -- are broadening the economic base.

New Mexico's land is rich in minerals and part of its soils are fertile, but water is extremely scarce. This lack of water has limited New Mexico's growth somewhat, but it has spurred the State to make the best use of the water it has.

New Mexico has large reserves of energy minerals such as coal, natural gas, petroleum and uranium. More uranium is produced in New Mexico than any other state. New Mexico also has the largest U.S. reserves of potash and has imprortant deposits of other minerals such as copper and zinc.

Farms and ranches cover about 47 million acres in New Mexico. The most important agricultural activity is ranching, and cattle and sheep outnumber people by almost two to one. Important field crops include hay, wheat, cotton, and pecans. Much of the irrigated farmland is located along the Rio Grande -- which forms the backbone of the State -- and the Pecos River.



OKLAHOMA

Mild climate, abundant natural resources, plentiful recreation opportunities, and bustling cities and towns have made Oklahoma a contemporary land of opportunity. Oklahoma is strategically located in the middle of the U.S. and has been called "the Buckle of the Sunbelt". It includes ten major land regions and is characterized by grassy plains, rolling hills, granite peaks, forests, and prairies. Sunny skies and an abundance of surface water make fishing, swimming, boating, and water skiing a major part of the myriad recreational opportunities throughout the State.

Oklahoma experienced an 18 percent population increase in the ten years preceeding 1980. About two-thirds of the current population of over three million live in urban areas. Over half of those live in the two largest metropolitan areas of Oklahoma City and Tulsa. Due to lower living costs and lower taxes, Oklahoma ranks nationally near the top in personal disposal income.

Rainfall across Oklahoma varies from 16 inches per year in the high plains of northwest Oklahoma to as much as 56 inches in the eastern "rainbarrel", where there is a concentration of ten lakes with power generating installations. Each year, about 30 million acre-feet of water pass through hydroelectric turbines to generate electrical energy to serve the power needs of Oklahoma and nearby states.

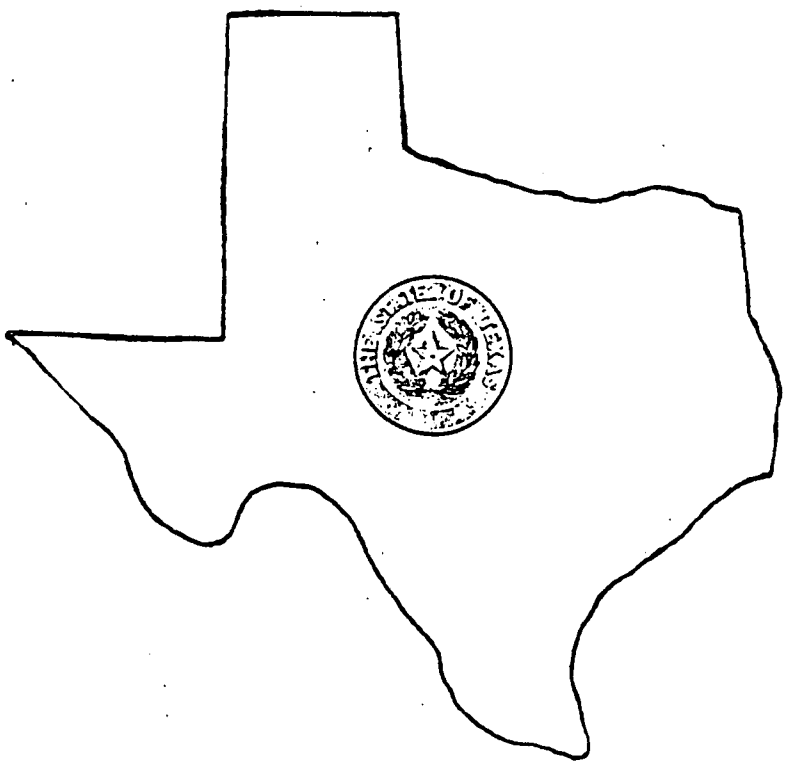
Oil and natural gas activities have a long history of important contributions to the growth of the State's economy. Oklahoma's oil reserves are among the largest in the U.S. Presently known recoverble gas reserves in Oklahoma are 11 trillion cubic feet, while production averages about 1.7 trillion cubic feet annually. And this doesn't count the recently discovered and partially

developed Deep Anadarko Basin in western Oklahoma. Oklahoma oil production is forecast to increase in 1983, marking the third straight year of oil production increases. About 50,000 miles of pipelines carry Oklahoma's oil, natural gas, and refined products to other states.

The value of non-petroleum minerals produced in Oklahoma totaled an estimated $234 million in 1981. Minerals are produced in varying amounts, but those of economic significance include bituminous coal, stone, clay, sand and gravel, gypsum, tripoli, salt, granite, iodine, and heluim.

Manufacturing in Oklahoma is widely diversified, with products ranging from automotive parts and aircraft to valves and window glass. The nonelectric machinery industry's leading products include oil field machinery and equipment and electronic computing equipment. Since 1960, Oklahoma has experienced an increase of 120 percent in manufacturing employment compared to an increase of 21.2 percent for the U.S. as a whole.

Agriculture accounts for about 20 percent of the value of goods produced in the State. Oklahoma ranks second among states in wheat production, and livestock production accounts for about 63 percent of Oklahoma's annual agricultural sales. The livestock industry has boomed in recent years, and Oklahoma now ranks third nationally in the number of cows with more than 2.4 million animals. Lumber and related industries also play an important part in the Oklahoma economy.



TEXAS

Texas is a land of contrasts. Its amazing variety of resources and people has left a profound mark on the Nation's history and the State promises to retain a position of influence, guiding the country's future. The spirited contrast of cultures is accented by a diversity of land forms and climates.

Texas is 267,336 square miles of moist eastern piney woods, open savannah, subtropical coastline, fertile prairies, high treeless plains, broad stretches of Chihuahuan desert broken by Trans-Pecos extensions of the Rocky Mountains, and barrier islands. Rainfall ranges from less than 10 inches a year in the west to over 48 inches a year in the east. Texas includes vast open spaces with few roads and few people, as well as 25 metropolitan areas. Nearly 70 state parks and two national parks, as well as a total of 6,300 square miles of lakes and streams, offer scenic, historic, and recreational opportunities.

Change is certain to be as much a part of Texas' future as its past. In the 15-month period between April 1980 and July 1981, Texas emerged as the new leader in the U.S. in absolute population growth. During the decade from 1970 to 1980, Texas' population increased 27.0 percent, compared to the

national rate of 11.4 percent. It is estimated that as much as 60 percent of the State's population gain over the decade has been due to in-migration. As the population grows, pressures are increasing on water supplies and transportation facilities.

Texas' momentum in recent years is the product of special circumstances, among them the rapid rise in energy prices, the State's generally favorable climate, good job opportunites, and attractive circumstances for private enterprise. Despite the historical record, however, the high growth rate cannot be counted on to persist.

Energy has always been important to Texas and will continue to be so in the future. A declining trend in Texas' oil and gas production, however, has significant implications for State revenues as well as for every sector of the Texas economy. Even so, Texas continues to lead the Nation in petroleum and natural gas reserves. Over 1,900 oil and gas wells were drilled in the Gulf of Mexico Outer Continental Shelf (OCS) off of Texas since 1954. Texas also leads the Nation in both the number and capacity of refining operations, as well as in capacity for the production of basic petrochemicals.

Lignite, coal, and uranium production has increased substantially over the past ten years. As significant as the increase in coal and uranium production has been, the increase has offset only about 25 percent of the petroleum production decline in the same time frame.

Given the likelihood of a continuing decline in Texas energy production and the likelihood of a considerable expansion in Texas energy consumption requirements, the economic growth of Texas may have to depend increasingly on energy imports. The advantages Texas has enjoyed over the past decade as a net energy exporter may be constrained somewhat in the future.

The two most important industrial centers in Texas are Houston and Dallas-Fort Worth, which together represent over 50 percent of the State's manufacturing output. Aside from energy production, leading industries include non-electric machinery, fabricated metal products, food products, transportation equipment, and electrical and electronic equipment manufacturing. Texas produces all of the graphite and magnesium in the country and ranks first in the Nation in electric power production.

Texas has 600 miles of coastline and more than 400 miles of intracoastal waterway, including 25 ports. Commercial fishing is an important industry, and shrimp production is among the highest in the Nation.

Texas leads the country in the production of cattle, cotton, sheep, and wool. It has more farms and farmed area than any other state. However, the rate of increase in agricultural productivity was halved between 1973 and 1978 as a result of the increasing cost of inputs.

STATE COORDINATION

The success of environmental programs require strong state-federal partnerships. Congress envisioned these strong partnerships when it created the major environmental laws that provide for ultimate implementation of environmental protection at the state level. This is a continuation of the concept that laws are best effected by those closest to the matter. Region 6 State environmental program responsibilities are outlined in Table I.

Delegation of environmental programs as envisioned by Congress is a top priority of the Agency. Nationwide in the last twenty months the delegation of program responsibility to state agencies increased from 33 percent to 55 percent of those programs that can be potentially delegated. In Region 6 during the last sixteen months this state delegation has increased from 35 percent to 76 percent. The status of delegation in Region 6 is summarized in Table II.

The success of this delegation is evidenced by marked improvements in the quality of our environment. For example, in the public water supply program, bacteriological violations account for about 85 percent of total violations reported. Since 1977, when our five states assumed this responsibility, the compliance with monitoring and reporting regulations improved from 61 percent to 72 percent . Compliance with the bacteriological standard for drinking water (actual water quality) improved from 89 percent to 93 percent.

The states in Region 6 are national leaders in assuming responsibilities for environmental programs. Texas and Louisiana share the honors of being the first states in the nation to be delegated the entire Underground Injection Control (UIC) program. Oklahoma has been fully delegated the (UIC) program, with Arkansas and New Mexico being partially delegated. Under the Resource Conservation and Recovery Act (RCRA), Texas became first in the nation to assume Phase Two of the hazardous waste management program, and Arkansas was third. All states in Region 6 are responsible for enforcement of pesticide regulations and certification of pesticide applicators. In the Superfund program, to date 91 percent of the sites in Region 6 are state leads or under Cooperative Agreements. All states in Region 6 are also active in the air and water programs. Significant delegations have also been accomplished in the air programs and in other water programs.

The real achievements in environmental protection and improvements are the results of our strong state partnerships. With the cooperative efforts of state agencies and federal government, the citizens of our states can look forward to continued environmental improvement in the years to come.

TABLE I

STATE ENVIRONMENTAL PROGRAM RESPONSIBILITIES

STATE	ARKANSAS	LOUISIANA	NEW MEXICO	OKLAHOMA	TEXAS
AIR QUALITY	Dept. of Pollution Control & Ecology	Dept. of Natural Resources	Environmental Improvement Division	State Dept. of Health	Air Control Board
WATER QUALITY	Dept. of Pollution Control & Ecology	Dept. of Natural Resources	Environmental Improvement Division	State Dept. of Health Dept. of Water Res. Conservation Commission Dept. of Poll. Con.	Dept. of Water Resources
DRINKING WATER	Dept. of Health	Dept. of Health & Human Resources	Environmental Improvement Division	State Dept. of Health	Dept. of Health
UIC	Dept. of Pollution Control & Ecology Oil & Gas Commission	Dept. of Natural Resources	Environmental Improvement Division Energy & Minerals Dept.	State Dept. of Health Corporation Commission	Dept. of Water Resources Railroad Commission
TOXICS	Dept. of Pollution Control & Ecology Dept. of Health Dept. of Education	Dept. of Natural Resources Dept. of Health & Human Res. Dept. of Education	Environmental Improvement Division Dept. of Education	State Dept. of Health	Dept. of Health Texas Education Agency
SUPERFUND	Dept. of Pollution Control & Ecology	Dept. of Natural Resources	Environmental Improvement Division	State Dept. of Health Dept. of Water Resources	Dept. of Water Resources
RCRA	Dept. of Pollution Control & Ecology	Dept. of Natural Resources	Environmental Improvement Division	State Dept. of Health	Dept. of Water Resources Dept. of Health
PESTICIDES	Plant Board	Dept. of Agriculture	State Dept. Agriculture	Dept. of Agriculture	Dept. of Agriculture
RADIATION	Dept. of Health	Dept. of Natural Resources	Environmental Improvement Division	State Dept. of Health	Dept. of Health

TABLE II

STATUS OF DELEGATION

		ARKANSAS	LOUISIANA	NEW MEXICO	OKLAHOMA	TEXAS
WATER	PWS	Delegated 07/10/77	Delegated 05/07/77	Delegated 04/01/76	Delegated 04/29/77	Delegated 01/29/78
	CONSTRUC-TION GRANTS	Delegated 09/25/81	State declined to seek delegation at this time	State will consider accepting delegation in FY 83	Delegated 02/29/80	Delegated 09/08/78
	UIC	Class I,III,IV,V delegated 7/06/82. Application for Class II to be submitted in May 83	Delegated 04/23/82	Application for Class I,III,IV V received 12/08/82. Class II delegated 02/05/81	Class I,III,IV v delegated 06/24/82. Class II delegated 12/02/81	Class I,III,IV,V delegated 01/06/82. Class II delegated 04/23/82
	NPDES	Public Meeting 11/22/82. Program Description, MOU and legal opinion received from State 02/17/83	State & EPA discussing, State needs additional permit staff.	State declines to seek delegation at this time.	10/06/82 EPA signed cooperative agreement with State to develop State permit system to lead to delegation	State is working on plan; problems have been identified and are being addressed; State has introduced legislation
AIR	PSD	Full delegation 02/16/82	Partial delegation 09/01/81 Full delegation expected in FY 83	Partial delegation 02/16/82 Full delegation expected in FY 83	Partial delegation 07/16/81 Full delegation expected in FY 83	Partial delegation 04/23/81 Full delegation 12/28,82
	NSPS	Partial delegation 09/14/81 Full delegation 03/25/82	Full Delegation 01/25/82	Partial delegation 08/17/82	Partial delegation 03/25/82	Partial delegation 11/15/78 Full delegation 12/28/82
	NESHAPS	Partial delegation 09/14/81 Full delegation 09/30/82	Partial delegation 08/30/82 Full delegation expected in FY 83	Partial delegation 08/30/82.	Partial delegation: 03/25/82	Partial delegation 11/15/78 Full delegation 12/28/82
RCRA	PHASE I	Delegated 11/19/80	Delegated 12/19/80	Anticipate Delegation in FY 84.	Delegated 01/19/81	Delegated 12/24/80
	PHASE II AND	Delegated 04/09/82	Application expected during FY 83	Anticipate delegation in FY 84	Delegated 12/03/82	Delegated 03/23/82
	PHASE IIC	Application expected in FY 83	Application expected in FY 84	Anticipate delegation in FY 84	Application expected in FY 83	Application expected in FY 83
PESTICIDES	APPLICATION CERTIFICATION	State Plan Approved 10/13/76	State Plan Approved 06/26/83	State Plan Approved 10/13/78	State Plan Approved 09/06/78	State Plan Approved 10/28/77
	ENFORCEMENT AGREEMENT	Signed 01/09/79	Signed 07/11/78	Signed 03/16/78	Signed 03/03/78	Signed 04/03/78

Delegation Planned

Fully Delegated

Under Consideration

Partially Delegated

MEDIUM BY MEDIUM

PRESENTATIONS

AIR QUALITY

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AIR PROGRAM

The Clean Air Act (CAA) states that the "prevention and control of air pollution at its source is the primary responsibility of State and local governments." The Federal Government is generally responsible for setting air quality standards, promulgating regulations, and overviewing the State's programs. The CAA requires States to prepare plans for attaining and maintaining the air quality. These State Implementation Plans (SIPs) include control strategies describing how the National Ambient Air Quality Standards (NAAQS) established under the CAA will be met. EPA reviews and approves these plans and the States implement them.

The CAA (Section 105) authorizes funds for the State and local governments to use in improving and maintaining air quality. These funds are provided through performance based grant agreements. These agreements contain objectives for the States' planning, monitoring, compliance, emissions inventory and other air program activities. In Region 6, the States of Arkansas, Texas, Louisiana, Oklahoma and New Mexico and the cities of Albuquerque, New Mexico; and Dallas, Fort Worth, El Paso, Galveston, Houston, and San Antonio, Texas receive 105 grant support for air pollution control programs.

The CAA provides for States to assume authority for programs controlling emissions from new sources. These include the Prevention of Significant Deterioration (PSD), New Source Performance Standards (NSPS), and the National Emission Standards for Hazardous Air Pollutants (NESHAPs) programs. In Region 6, Arkansas has full authority for these three programs; Texas has partial authority for the PSD program and full authority for the NSPS and NESHAPs programs; Louisiana has partial authority for the PSD and NESHAPs program and full authority for the NSPS program; Oklahoma has partial authority for the PSD (their PSD SIP has been proposed for approval) and partial authority for NSPS and NESHAPs while New Mexico has partial authority for all three programs.

AIR QUALITY

The status of and trends in air quality in Region 6 can most easily be shown through a comparision of the values obtained in monitored areas to the NAAQS for the criteria pollutants. Measured values over the primary standard, or exceedances, are an indicator of the air quality. EPA also established levels greater than the NAAQS for each criteria pollutant at which public health could be endangered. The level at which the first stage control actions are to begin is called the alert level. These levels, along with the primary and secondary NAAQS for the criteria pollutants, are shown in Table 1.

During 1981, 21 counties and parishes in Region 6 showed measured values over the alert level for at least one of the NAAQS, (Figure 1). However, 18 counties/parishes exceeded the level only once, and 11 were only for total suspended particulates. Twenty-one additional counties/parishes showed measured values over the primary standard for at least one NAAQS;

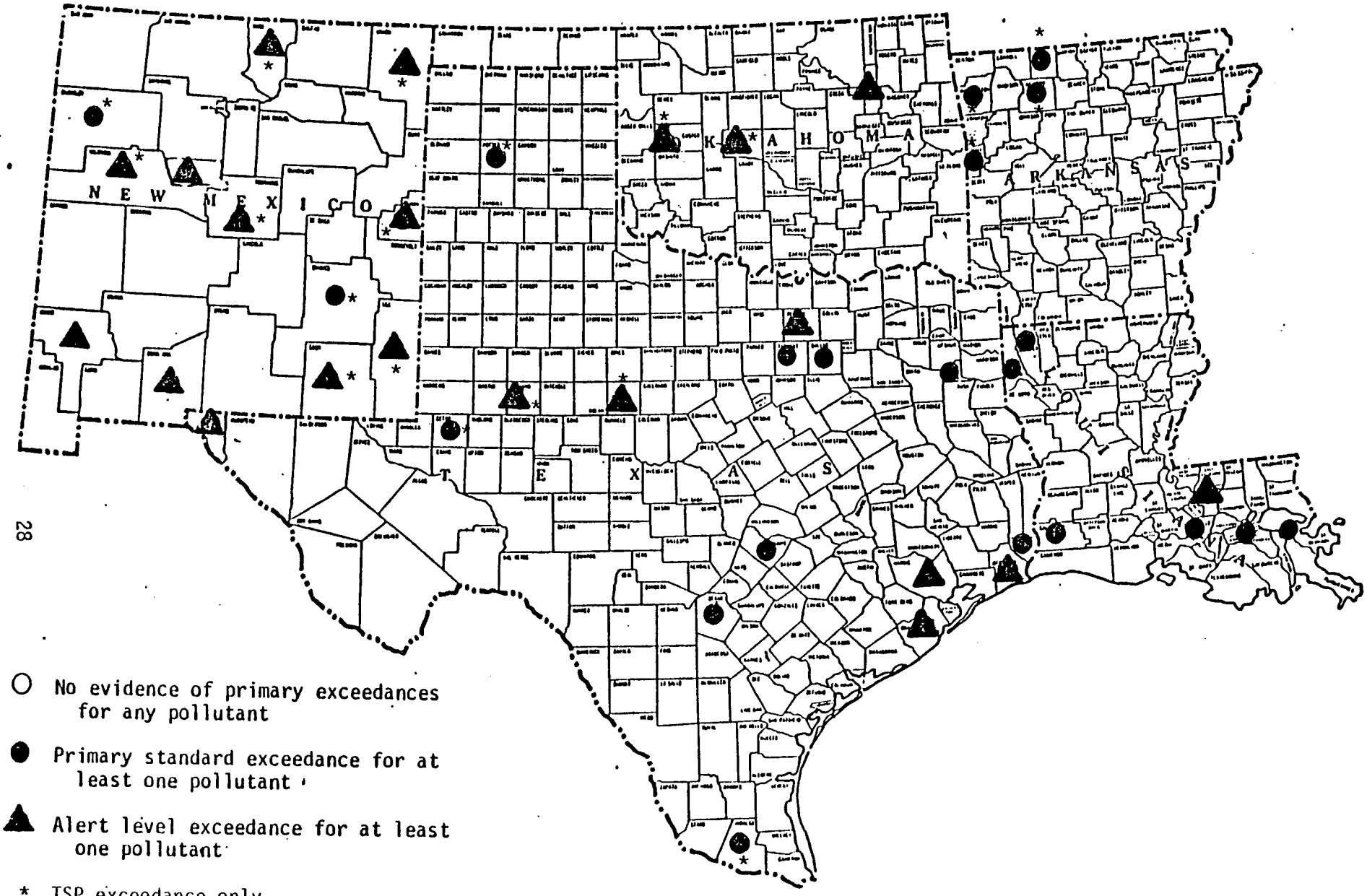
TABLE 1

SUMMARY OF NATIONAL AMBIENT AIR QUALITY STANDARDS AND ALERT LEVELS

POLLUTANT	AVERAGING TIME	PRIMARY STANDARDS	SECONDARY STANDARDS	ALERT LEVEL	COMMENTS
Particulate Matter	Annual (Geometric Mean)	75 ug/m^3	60 ug/m^3		The secondary annual standard (60 ug/m^3) is a guide for assessing SIPs to achieve the 24-hr. secondary std.
	24-hour*	260 ug/m^3	150 ug/m^3	375 ug/m^3	
Sulfur Dioxide	Annual (Arithmetic mean)	80 ug/m^3 (0.03 ppm)	-		
	24-hour*	365 ug/m^3 (0.14 ppm)	-	800 ug/m^3 (0.3 ppm)	
	3-hour*	-	1300 ug/m^3 (0.5 ppm)		
Carbon Monoxide	8-hour*	10 mg/m^3 (9 ppm)	(Same as primary)	17 mg/m^3 (15ppm)	
	1-hour*	40 mg/m^3 (35 ppm)			
Nitrogen Dioxide	Annual (Arithmetic mean)	100 ug/m^3 (0.05 ppm)	(Same as primary)		
	1-hour	-		1130 ug/m^3 (0.6 ppm)	
	24-hour	-		282 ug/m^3 (0.15 ppm)	
Ozone	1-hour**	235 ug/m^3 (0.12 ppm)	(Same as primary)	400 ug/m^3 (0.2 ppm)	
Lead	Calendar Quarter	1.5 ug/m^3 (.006 ppm)	(Same as primary)		

*Not to be exceeded more than once per year, for primary and secondary standards.
**Not more than 1.0 expected exceedance per year, 3-year average.

FIGURE 1 - Counties in Region 6 Exceeding the Alert or Primary Standard for at Least One Pollutant - 1981



○ No evidence of primary exceedances for any pollutant

● Primary standard exceedance for at least one pollutant

▲ Alert level exceedance for at least one pollutant

* TSP exceedance only

16 of these counties/parishes also had only one exceedance. More detailed information on these exceedances across the Region is provided for each criteria pollutant in Attachment A of this report.

The majority of Region 6 is currently classified as attainment for the NAAQS, or there is insufficent monitoring data to classify the area. There are 64 areas designated as nonattainment: 32 for ozone (O_3), 27 for total suspended particulates (TSP), 3 for carbon monoxide (CO) and 4 for sulfur dioxide (SO_2). Some of the areas are designated nonattainment for more than one pollutant. These areas are contained in 41 counties and parishes; some cover more than one county while some are only portions of one county. We believe that the majority of these areas are now attaining the NAAQS with only approximately 12 areas in 14 counties believed to still be violating a NAAQS, as shown in Table 2. There are no areas designated as nonattainment for nitrogen dioxide (NO_2) or lead (Pb).

Reductions in emissions have been achieved through implementation of control strategies in the States' Implementation Plans (SIPs) and enforcement actions taken against sources not complying with state or Federal clean air regulations. Additional improvements in air quality are expected in 1983 as a result of regulations effective in December 1982, which should further reduce emissions.

The improvement in air quality in major urban and industrial areas in Region 6 is significant given the industrial concentration and the increase in population over the past few years in the Region 6 States. In 1982, there were approximately 2676 major sources in the Region. The Region has experienced a significant increase in population; in 1980, the Region's population was 25,042,000 compared to 20,243,000 in 1970 reflecting about a 24 percent increase. Population increases are closely related to increases in area sources, such as dry cleaners and mobile sources which in turn correspond to increases in emissions from these sources.

The trends in air quality in Region 6 are briefly discussed below for each criteria pollutant and are based on data from the National Aerometric Data Bank (NADB) for the years 1977 through 1981. The data reflected on the charts are from those monitors operating during 1977-1981, regardless of the length of time the monitor was operational. Therefore, these charts only present general trends in air quality improvements or deterioration. A change is shown if the concentration of a specific pollutant was found significant at the 80 percent confidence level so that minor variations from year to year are not depicted here. The 31 Air Quality Control Regions (AQCR) in Region 6 were separated by State and trends were calculated for all monitors in these 37 distinct areas. However, not all areas could be analyzed as some of these areas do not have an established monitor reported to NADB or there was insufficient data.

Ozone (O_3): Ozone is the major air quality problem in Region 6; however, there has been some improvement in monitored areas over the past few years in ozone concentrations. Air quality is improving or remaining the same in most of the Region as shown in Table 3. Nine of the areas show improving air quality, while seven remained about the same level and only one appeared to be deteriorating. However, the deteriorating area has not exceeded the

TABLE 2
Nonattainment Areas in Region 6
1978 - 1982

State	1978 Nonattainment Designations				1982 Nonattainment Designations				*Projected to be Nonattainment after 12/31/82			
	CO	O_3	TSP	SO_2	CO	O_3	TSP	SO_2	CO	O_3	TSP	SO_2
Arkansas	0	1	1	0	0	1	0	0	0	0	0	0
Louisiana	0	19	0	0	0	19	0	0	0	5	0	0
New Mexico	4	1	4	2	2	0	4	2	†1	0	2	1
Oklahoma	1	3	3	1	1	1	3	0	0	1	0	0
Texas	1	15	9	0	1	11	4	0	1	††4	4	0
Total	6	39	17	3	4	32	11	2	2	10	6	1

Nonattainment designations are generally Countywide; however, TSP, CO, and SO_2 nonattainment designations could represent one or more areas within a county rather than the entire County.

* Rural areas, which may be able to demonstrate that the area would attain the primary O_3 NAAQS except for the effect of transported O_3 air pollution, have been excluded from this category.

† Bernalillo County received an extension until 1987.

†† Harris County received an extension until 1987.

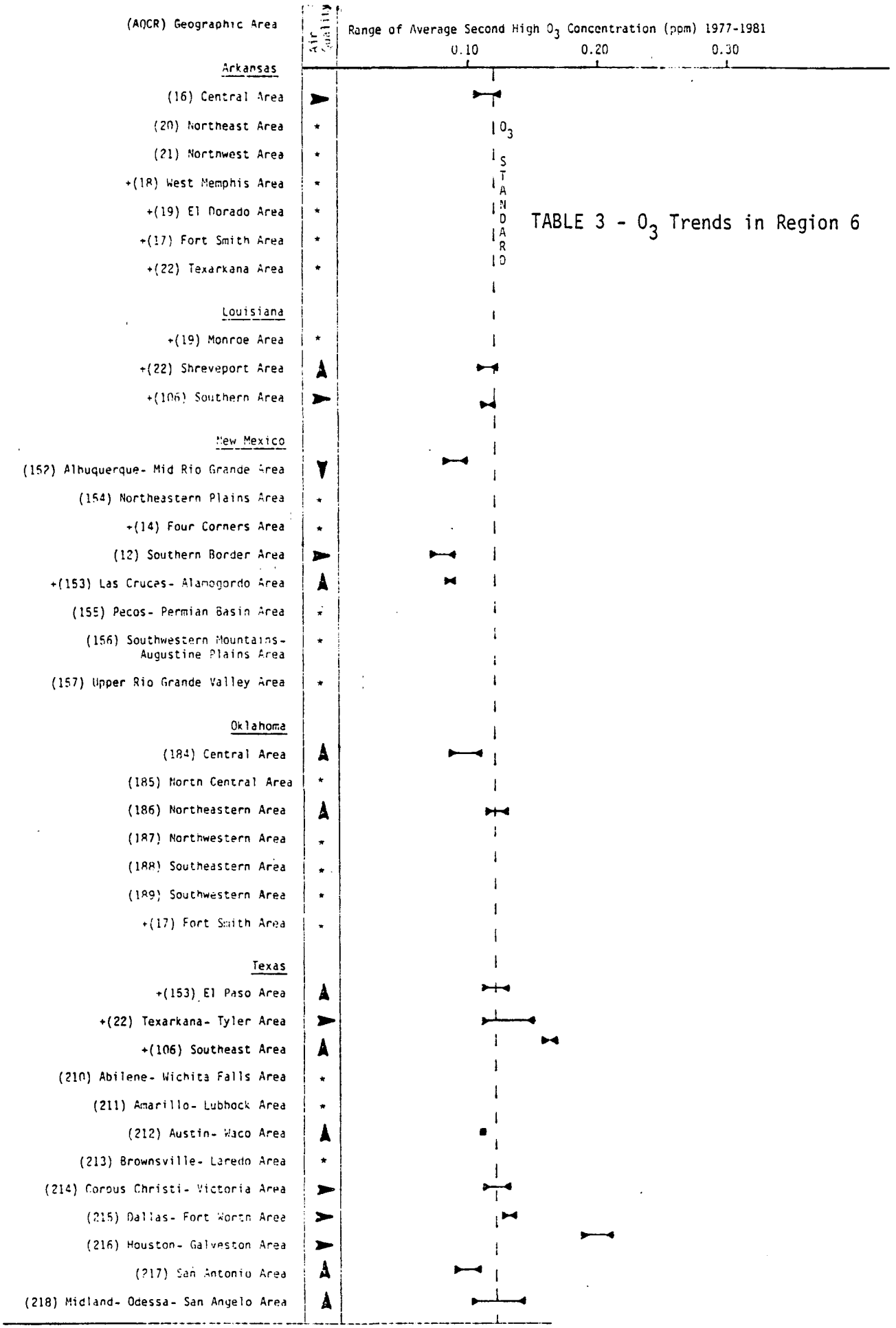


TABLE 3 - O_3 Trends in Region 6

primary standard and is classified as attainment. Monitoring data was not available for 20 areas which are primarily rural areas with few sources of pollution.

Carbon Monoxide (CO): There has also been some improvement in monitored areas in carbon monoxide levels in Region 6. Improvements in carbon monoxide levels were shown in six areas, seven areas remained the same and only two areas showed deteriorating air quality (Table 4). Of the two deteriorating areas, one is below the standard and is not a problem area; the other is the El Paso, Texas area which is discussed further in Part II. Twenty-two areas lacked sufficient monitoring data to establish a trend.

Total Suspended Particulates (TSP): Within the last several years, progress has been made in reducing TSP levels in Region 6. As shown in Table 5, TSP levels improved in 8 areas, 18 remained about the same and 2 measured higher concentrations. The two areas with highest concentrations are not exceeding the annual arithmetic mean for TSP and are not problem areas.

Sulfur Dioxide (SO_2): Table 6 shows the changes in SO_2 levels in the Region; two areas show improvements, eight show the same levels, six show deteriorating air quality and 21 lack sufficient monitoring data to establish a trend. However, none of the areas with higher concentrations of SO_2 exceeded the annual arithmetic mean for SO_2.

Nitrogen Dioxide (NO_2): Nitrogen dioxide is not considered a significant problem in Region 6. The trends in NO_2 levels are shown in Table 7. Four areas had improved air quality, four remained about the same, and five experienced increased concentrations of NO_2. Of these areas, none are exceeding the annual arithmetic mean for NO_2. There was insufficient monitoring data to establish a trend for the remaining 24 areas.

Lead (Pb): Lead air quality levels for most of Region 6 are unknown at this time as most National Air Monitoring Station and State and Local Air Monitoring Station (NAMS/SLAMS) monitoring programs for Pb are just getting started. There are two areas in which levels exceeding the Pb NAAQS were observed in Texas. New Mexico has also observed elevated lead levels because of a lead source in Texas. Texas, in cooperation with EPA, has developed a monitoring program to determine the air quality levels and the extent of the problem in these areas. Oklahoma, Lousisana and Arkansas have no know ambient lead problems, however, ambient monitoring will be fully operation in all States soon.

Air Toxics: Airborne toxics is becoming a more visible issue in Region 6, particularly in Texas and Louisiana due to the concentration of highly industrialized areas in these States. Several States are now able to concentrate a portion of their resources on efforts to determine the presence and extent of potentially toxic airborne contaminants, as basic air programs are generally established. Since there is very limited ambient and emissions data available on air toxics, these States are now undertaking research and monitoring efforts in targeted areas.

Acid Rain: Another emerging issue in Region 6 may be acid deposition due to the increased NO_2 and SO_2 emissions in some areas of the Region.

Recent reports, such as the Texas Energy and Natural Resources Advisory Council report entitled "Plan to Evaluate Acid Deposition Issues in the State of Texas", January 15, 1982, indicate that acid rain may cause a natural resource problem in parts of Region 6 due to acidic soils. Several Region 6 States have initiated research efforts, including participation in the National Acid Deposition Project, to determine whether an acid deposition problem exists. Dry deposition is currently thought to be a more significant problem than acid rain in Region 6 due to the climatology of the Region.

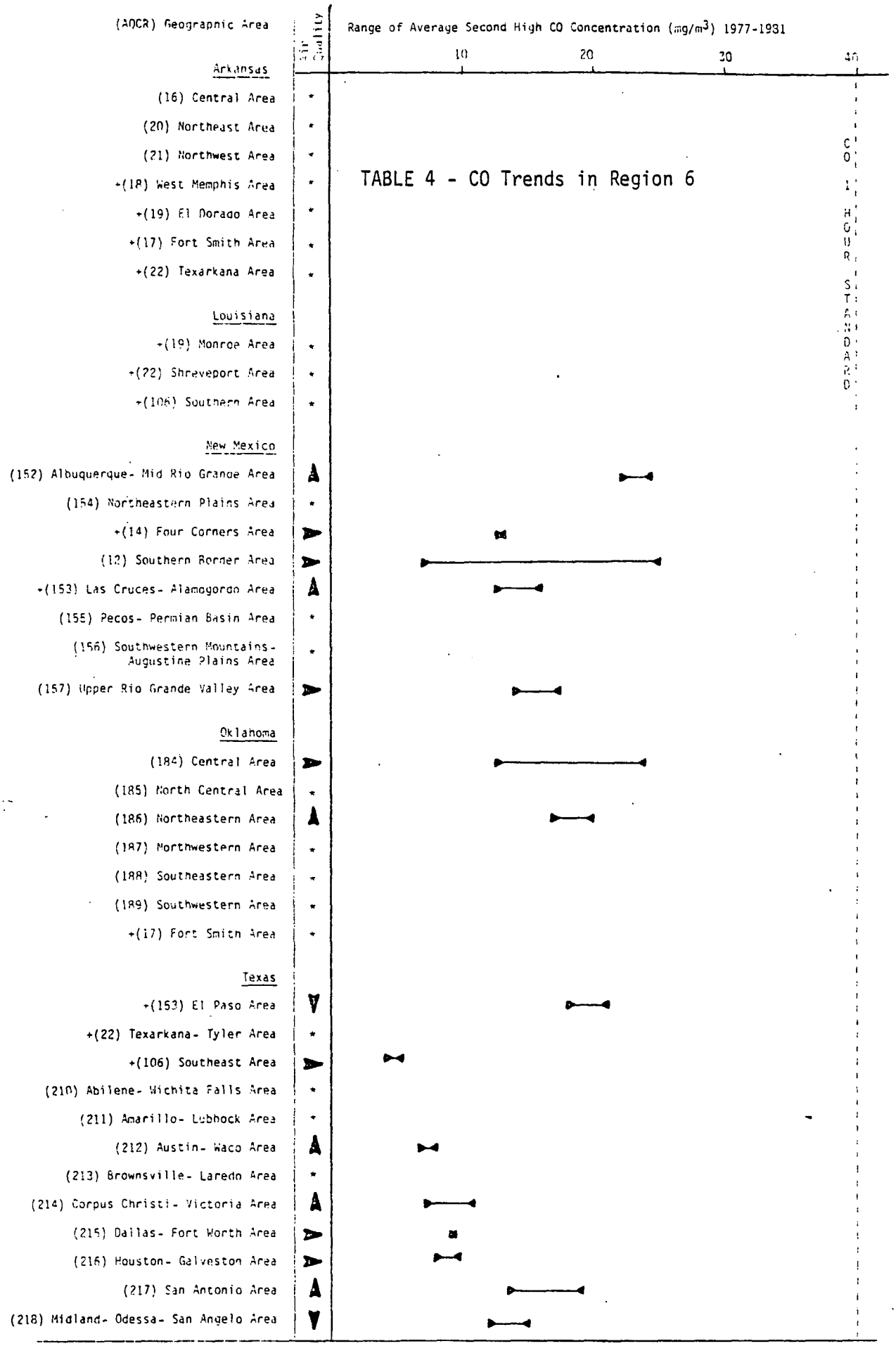


TABLE 4 - CO Trends in Region 6

▲ Air Quality Improving ▼ Air Quality Deteriorating *Insufficient or no monitoring data available

► No Significant Change in Air Quality + AQCR crosses state border
(Monitoring data from AQCRs crossing State borders were separated by State.)

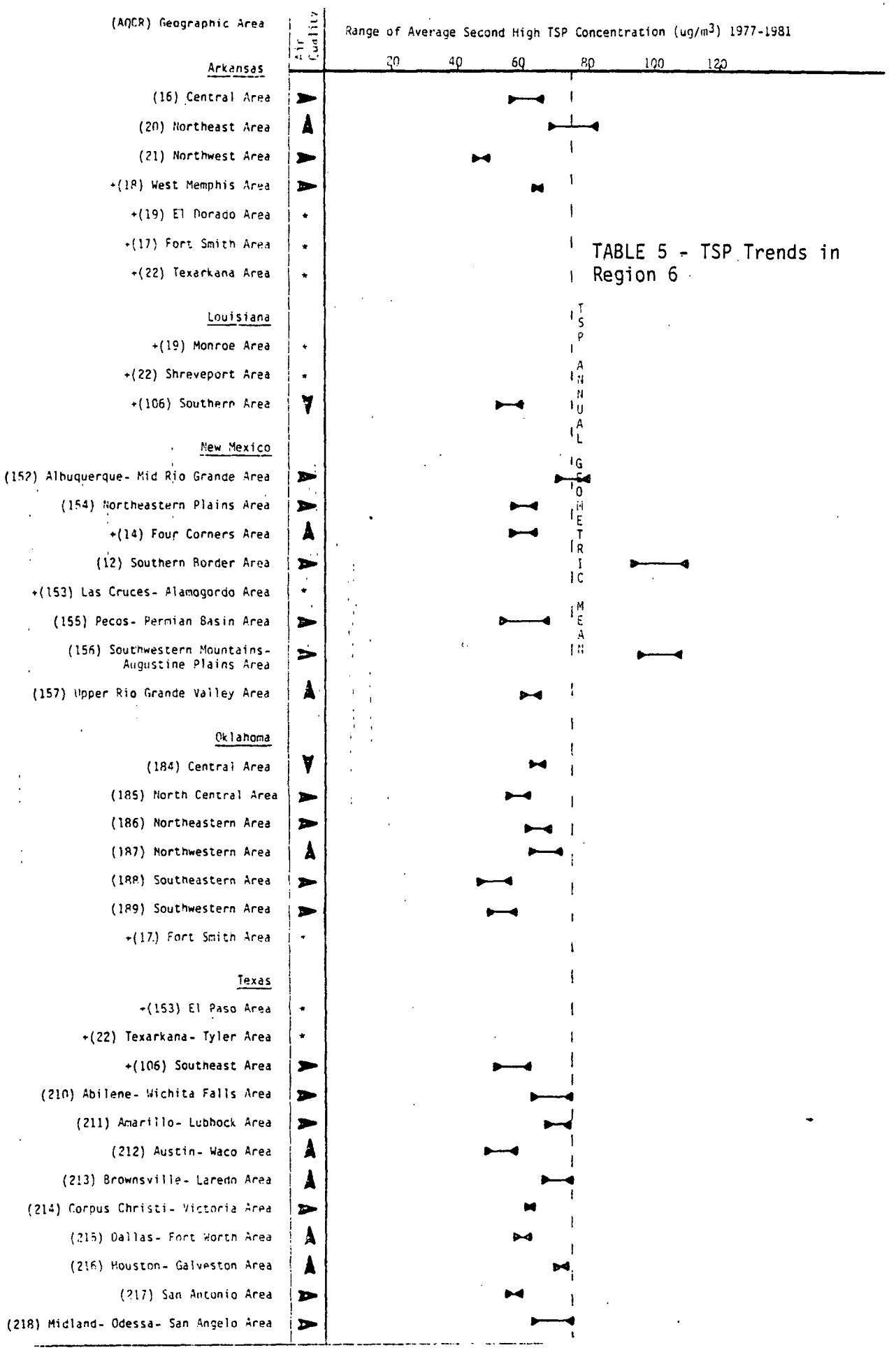


TABLE 5 - TSP Trends in Region 6

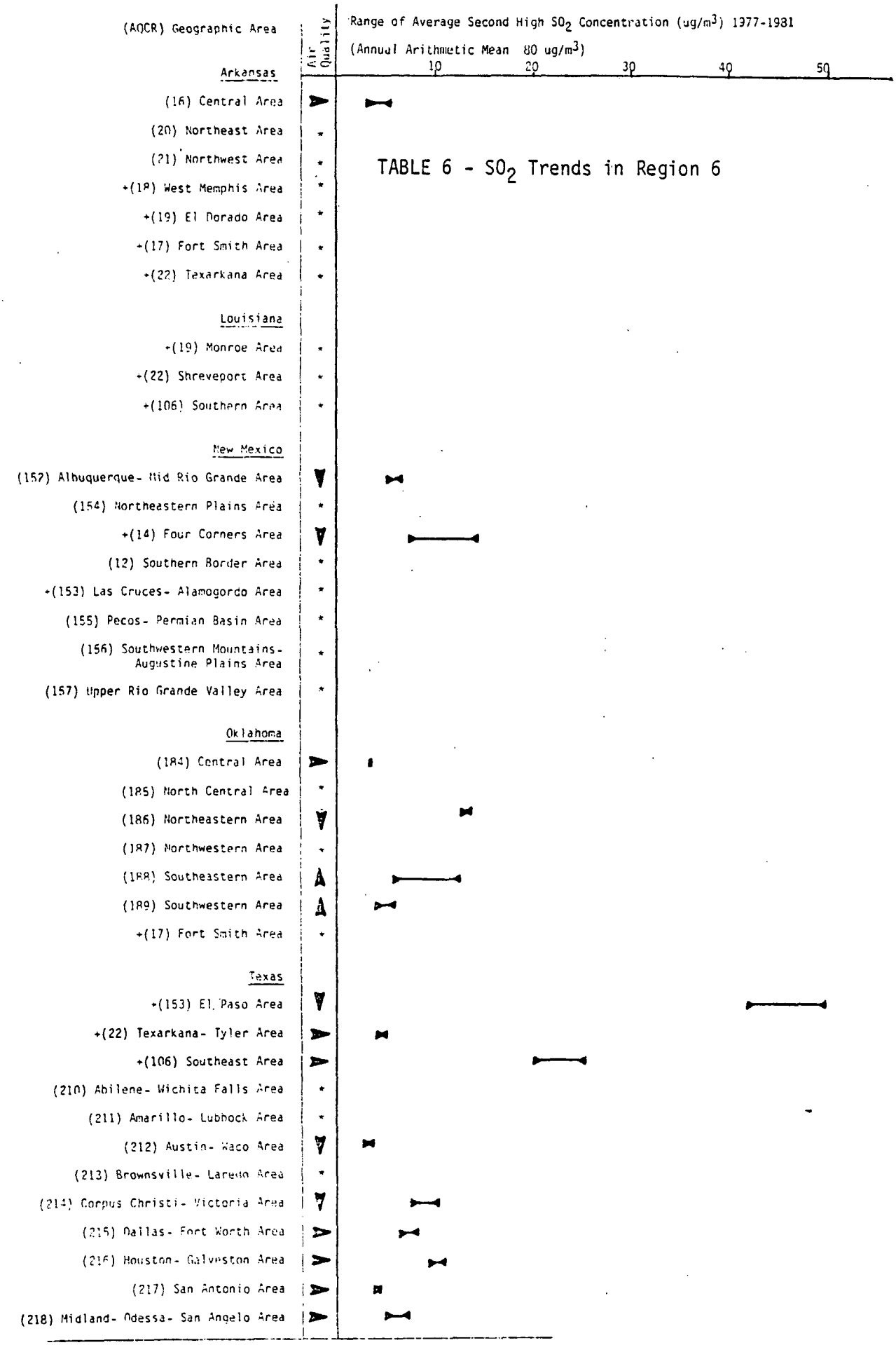
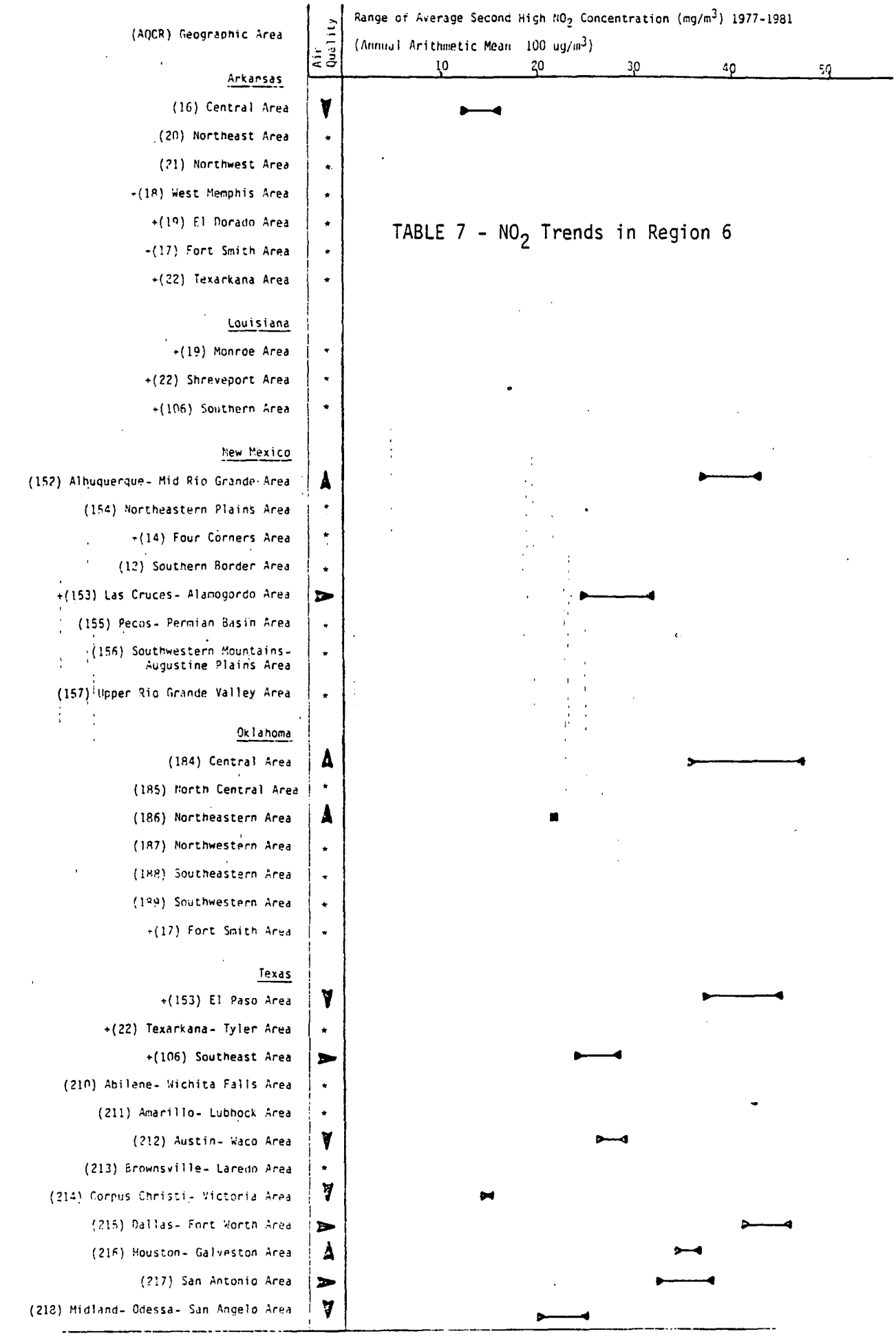

(AQCR) Geographic Area
Air Quality
Range of Average Second High SO_2 Concentration (ug/m^3) 1977-1981
(Annual Arithmetic Mean 80 ug/m^3)
10
20
30
40
50
TABLE 6 - SO_2 Trends in Region 6
Arkansas
(16) Central Area
(20) Northeast Area
(21) Northwest Area
+(18) West Memphis Area
+(19) El Dorado Area
+(17) Fort Smith Area
+(22) Texarkana Area
Louisiana
+(19) Monroe Area
+(22) Shreveport Area
+(106) Southern Area
New Mexico
(152) Albuquerque- Mid Rio Grande Area
(154) Northeastern Plains Area
+(14) Four Corners Area
(12) Southern Border Area
+(153) Las Cruces- Alamogordo Area
(155) Pecos- Permian Basin Area
(156) Southwestern Mountains- Augustine Plains Area
(157) Upper Rio Grande Valley Area
Oklahoma
(184) Central Area
(185) North Central Area
(186) Northeastern Area
(187) Northwestern Area
(188) Southeastern Area
(189) Southwestern Area
+(17) Fort Smith Area
Texas
+(153) El Paso Area
+(22) Texarkana- Tyler Area
+(106) Southeast Area
(210) Abilene- Wichita Falls Area
(211) Amarillo- Lubbock Area
(212) Austin- Waco Area
(213) Brownsville- Laredo Area
(214) Corpus Christi- Victoria Area
(215) Dallas- Fort Worth Area
(216) Houston- Galveston Area
(217) San Antonio Area
(218) Midland- Odessa- San Angelo Area
Air Quality Improving
Air Quality Deteriorating
*Insufficient or no monitoring data available
No Significant Change in Air Quality
+ AQCR crosses state border
(Monitoring data from AQCRs crossing State borders were separated by State.)

TABLE 7 - NO_2 Trends in Region 6



▲ Air Quality Improving ▼ Air Quality Deteriorating *Insufficient or no monitoring data available

► No Significant Change in Air Quality

+ AQCR crosses state border
(Monitoring data from AQCRs crossing State borders were separated by State.)

PART II - SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS FOR AGENCY MANAGEMENT

AIR QUALITY PROBLEMS

Methodology:

Problem Identification: Region 6 used the following criteria to determine which areas should be initially considered as potentially significant air quality problem areas:

- Air quality data - levels and trends
- Population data
- Current on-going regulatory and compliance programs
- Future air control activities for the area
- Geographic size of the area

The final list of problem areas was developed based on these factors:

- Air quality data show exceedances of primary NAAQS for at least two years and at levels of 115% of the standard.
- Area is either currently designated as nonattainment (and not expected to attain by December 31, 1982) or area clearly shown to not be in attainment, regardless of designation.
- Some areas meeting the above criteria were not included as significant problems because:
  - the Agency's rural O_3 ozone policy applied
  - controls by the State are expected to soon eliminate the problem.

Data Analysis: Existing problems are those areas for which sufficient data and evidence of problems exists. Emerging problems include those that may be perceived by the States or the public as a significant problem although data may not be currently available to clearly support this view. Also, an emerging problem may have been in existence but is only now being addressed.

Air monitoring data from all SLAMS/NAMS sites listed in the Storage and Retrieval of Aerometric Data (SAROAD) system for the years 1977-1981 were used. Data were taken from the National Aerometric Data Bank Quick Look Reports and State and Local Air Monitoring Annual Summary Reports. However, ambient data were used only from selected monitoring sites meeting the following criteria:

- The monitor must have had at least 50% of the possible observed time reported (data completeness).
- The monitor must have had at least 3 years of data collected.

It is important to note that there are few monitors in rural areas unless there is a major source with the potential to significantly impact air quality in that area. As air pollution is caused, in large part, by manmade sources (industrial and mobile), most monitors are located in highly industrialized

and/or highly populated areas. However, TSP monitors can be located in smaller communities since particulate problems can be due to fugitive dust from unpaved roads, parking lots and agricultural sources.

The emissions inventory data were obtained from 1979 SIPs, except for the data for Harris County which are from the State's 1982 SIP. The emissions inventories in these SIPs are based on data collected from surveys of sources in the appropriate source categories and contain projections of the amount of emission reductions that should be achieved through the control strategies outlined in the appropriate SIP.

Significant Air Quality Problems Include:

Existing Problems:

° Ozone
- Houston, Dallas, Fort Worth, and El Paso, Texas
- New Orleans and Baton Rouge, Louisiana
- Tulsa, Oklahoma
- Rural nonattainment areas in Texas and Louisiana

° Carbon Monoxide
- Albuquerque, New Mexico
- El Paso, Texas

° Total Suspended Particulates
- Harris (Houston), El Paso, Cameron and Nueces Counties, Texas
- Bernalillo (Albuquerque) and Grant Counties, New Mexico

Emerging Problems:

° Lead

° Air Toxics

Discussion of Significant Air Quality Problems: The air quality problems will be described by pollutant, for each area of the Region, and implications for management, including the barriers and State and EPA actions for solving the problems are also discussed on a pollutant specific basis.

Ozone Problem Areas:

° Harris County (Houston), Texas: The most severe ozone problem in Region 6 is in the Houston area, which received an extension for attainment of the O_3 NAAQS until December 31, 1987. This area experiences numerous violations of the O_3 standard, generally during the months of April through October. The peak value recorded from 1977 to 1981 was a .340 parts per million (ppm) value in 1980 as shown in Figure 2a. The lowest of the peak O_3 values during this time was .230 ppm, recorded in 1978. The second high O_3 values from the monitoring sites in Harris County, meeting the data completeness criteria, averaged for each year, indicate values ranging from .210 ppm to .244 ppm with no discernable trend. (Figure 2b). The number of days exceeding the standard is decreasing

in Harris County as shown in Figure 2c. There were only 23 days in 1981 when the standard was expected to be exceeded, compared to 40 days in 1979 and 26 days in 1980. The "expected exceedance" measure is considered a more accurate indicator of O_3 air quality than actual days exceeded since it accounts for expected exceedances if monitors were not operating for a sufficient amount of time during that year. Of the time O_3 was measured in 1981, 93 percent were at levels less than the .12 ppm O_3 standard as shown in Figure 2d.

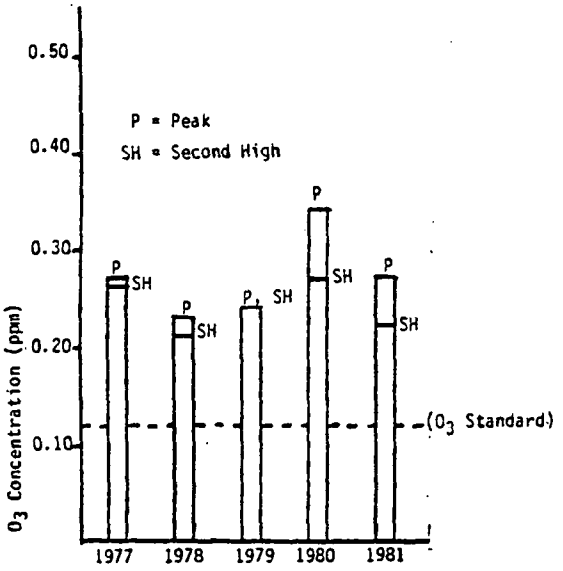
Houston's major source of volatile organic compounds (VOC) is stationary sources, such as petroleum refineries, storage, transportation and marketing of petroleum products, and organic chemical manufacturing. Figure 9 shows the contribution of emissions from stationary and mobile sources and the change in emissions to be obtained from the 1982 ozone SIP for Harris County. Modeling analysis indicates that a 41 percent reduction in VOC emissions is needed to attain the O_3 standard in 1987.

The State's plan proposes to achieve the reduction by stationary source controls, the Federal Motor Vehicle Control Program, a motor vehicle parameter inspection and maintenance (I/M) program and transportation control measures. Some of the stationary source controls were implemented by the end of 1982 and the remainder are to be implemented by the end of 1987. These controls provide reductions in VOC emissions from petroleum refineries, storage of petroleum products, miscellaneous solvent usage (degreasing) and industrial surface coating.

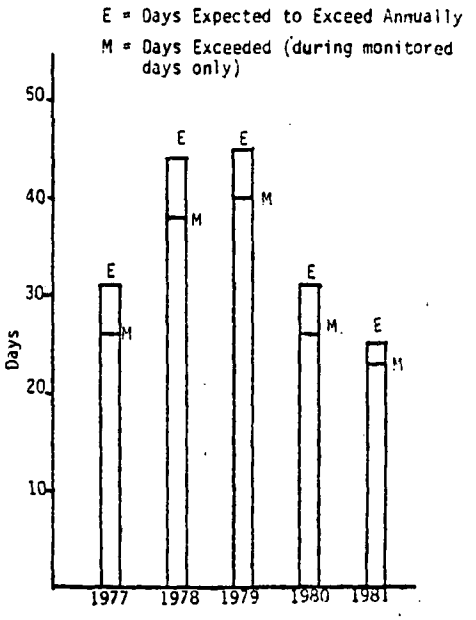
As of December 31, 1982, there were 126 major industrial facilities emitting volatile organic compounds (VOC) in the Houston area, all are currently in compliance with the State's VOC regulations.

The dramatic growth in population, during 1977 to 1982, may have contributed to increased VOC emissions. The population increase from 1970 to 1980 of 43 percent, with a 2.42 percent annual increase estimated from 1977 to 1982, led to operation of more dry cleaners and other small sources, known as area sources, of VOC emissions. However, potential increases in emissions from new major stationary sources built during this time, were offset by decreases in emissions from facilities closing down or replacing old equipment. For mobile source emissions, there has been an increase of approximately 20 percent in the number of vehicles in Harris County and a proportional increase in vehicle miles traveled. However in the 1979 SIP, the State, projected that this rate of increase in vehicle miles traveled would still allow for about a 36 percent decrease in emissions from automobiles due to replacement of older cars with new cleaner model cars.

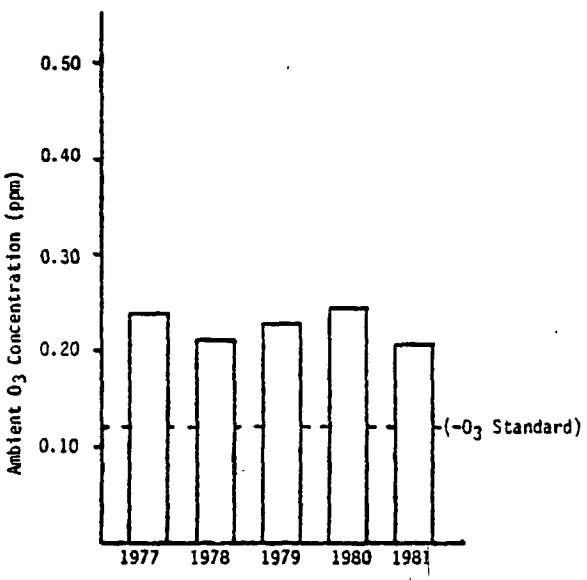
° Dallas County (Dallas), Texas: Ozone air quality in Dallas County was slightly improved in 1981 compared to 1977, although it had deteriorated from 1979 and 1980 O_3 levels. Furthermore, the 1982 levels have also increased, according to the State's data. The peak O_3 value recorded from 1977 to 1981 was .195 ppm in 1977 and the lowest peak value was .140 ppm in 1978, as shown in Figure 3a. The State's data indicate a peak of .200 ppm during 1982. The second high O_3 values, averaged over the monitoring sites in Dallas County, meeting data completeness criteria,



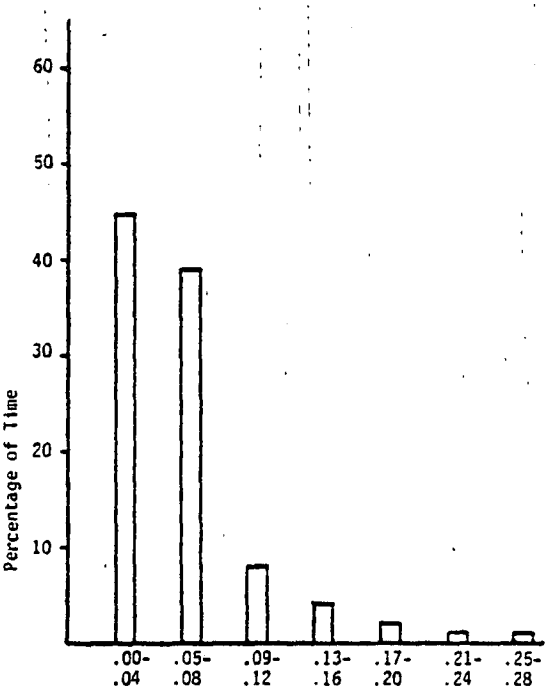
(a) Peak and Second High O_3 Values in Harris County, Texas



(c) Number of Days Exceeding the O_3 Standard in Harris County, Texas



(b) Average of Second Highest O_3 Values in Harris County, Texas



(d) Percentage of Time in O_3 Concentration Ranges, Harris County, Texas, Selected Sites, 1981

FIGURE 2- Ozone - Harris County

show a range from .130 ppm to .186 ppm with no perceptable trend from 1977 to 1981 (Figure 3b). The number of days expected to exceed the standard ranged from two days in 1978 to over twelve days in 1980, as shown in Figure 3c. It should be noted that only ten days actually exceeded the standard. The "expected exceedance" measure is considered a more accurate indicator of O_3 air quality since it accounts for expected exceedances if the monitors were not operating for a sufficient amount of time during that year. The State's data includes eleven exceedances of the O_3 standard in 1982. Of the time O_3 was measured in 1981, 93 percent was at levels less than the .12 ppm O_3 standard, as shown in Figure 3d.

Dallas' major source of VOC emissions are vehicles since 65 percent of the emissions are from mobile sources (Figure 9). The area's major stationary sources of VOC emissions include: storage, transportation and marketing of petroleum products and miscellaneous solvent usage.

The 1979 SIP projected that Dallas County would attain the O_3 standard by December 31, 1982. The SIP included planned emissions reductions from the Federal Motor Vehicle Control Program and vapor control for service station loading operations. The ambient data clearly show that Dallas County has not attained the O_3 standard. It appears that one factor may have been the increase in emissions from mobile sources, since the annual vehicle miles of travel in Dallas County increased by roughly 18 percent. The 44 major VOC stationary sources in Dallas County probably did not experience increased emissions since there were no major modifications or new facilities without an offset of emissions. In addition, all of these sources are in compliance with applicable State regulations.

°Tarrant County (Fort Worth), Texas: The peak O_3 value recorded from 1977 to 1981 was .190 ppm in 1979 and the lowest peak value was .140 ppm in 1981 as shown in Figure 4a. 1982 data includes one exceedance of .130 ppm (data only available through June). The second high O_3 values, averaged from the monitoring sites in Tarrant County, indicate values ranging from .130 ppm to .151 ppm with a downward trend from 1977 to 1981, as shown in Figure 4b. Figure 4c shows the number of days expected to exceed the standard, ranging from three in 1978 to over twelve in 1979, with no apparent trend. It appears one day exceeded the standard in 1982, based on the available data. Of the time O_3 was measured in 1981, 99 percent was at levels less than the .12 ppm standard, as shown in Figure 4d.

Tarrant County's VOC emissions are contributed in approximately equal proportions by stationary and mobile sources (Figure 9). There are 48 major VOC stationary sources in Tarrant County, and all are in compliance with applicable regulations. The area's major stationary sources are similar to Dallas' and include storage, transportation and marketing of petroleum products, miscellaneous solvent usage facilities and industrial surface coating operations.

The 1979 SIP projected attainment of the O_3 standard in Tarrant County by December 31, 1982. The control strategies in the SIP focused on a reduction in emissions from mobile sources through the Federal Motor Vehicle Control Program and from stationary sources through controls on industrial surface

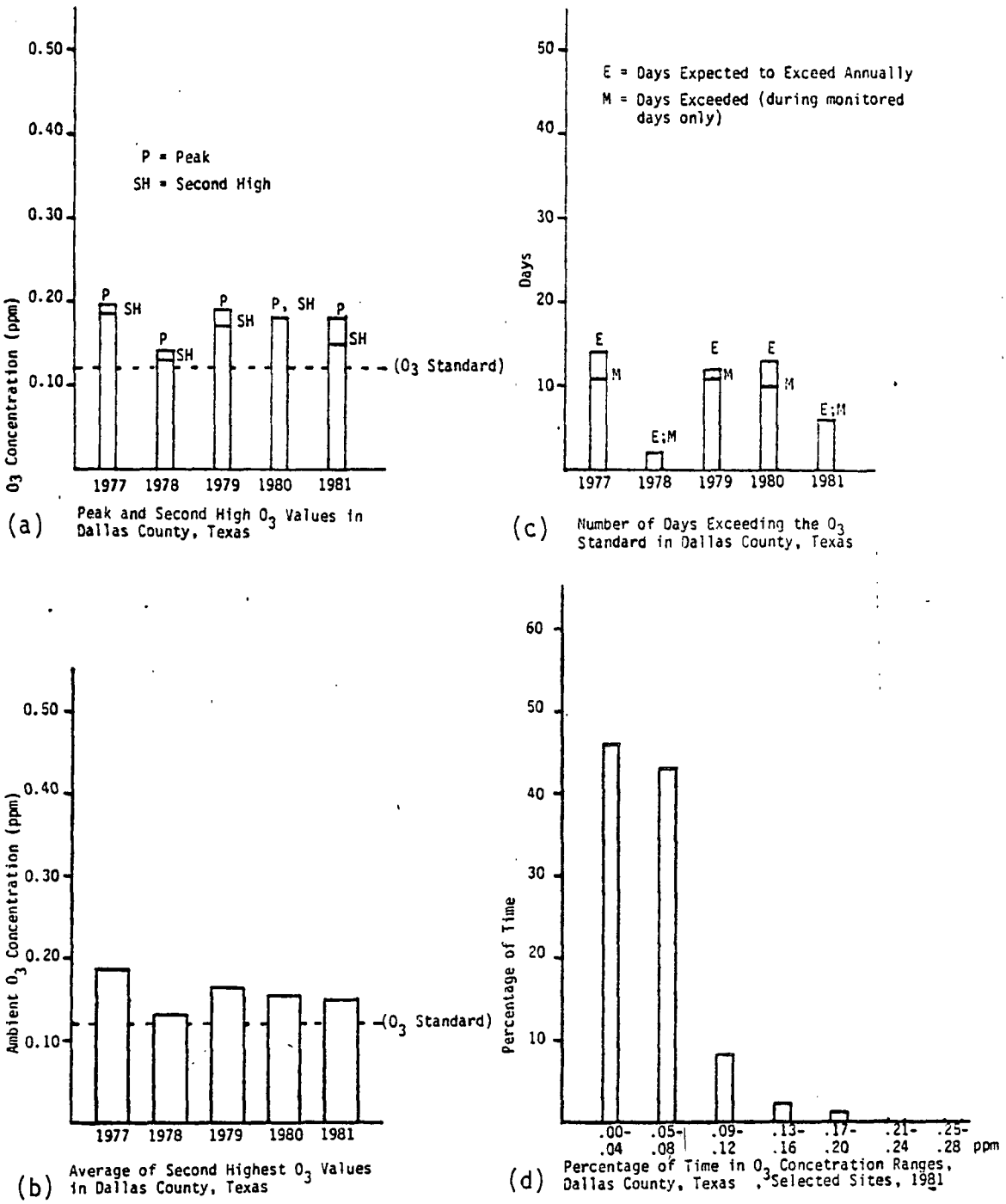


FIGURE 3 - Ozone - Dallas County, Texas

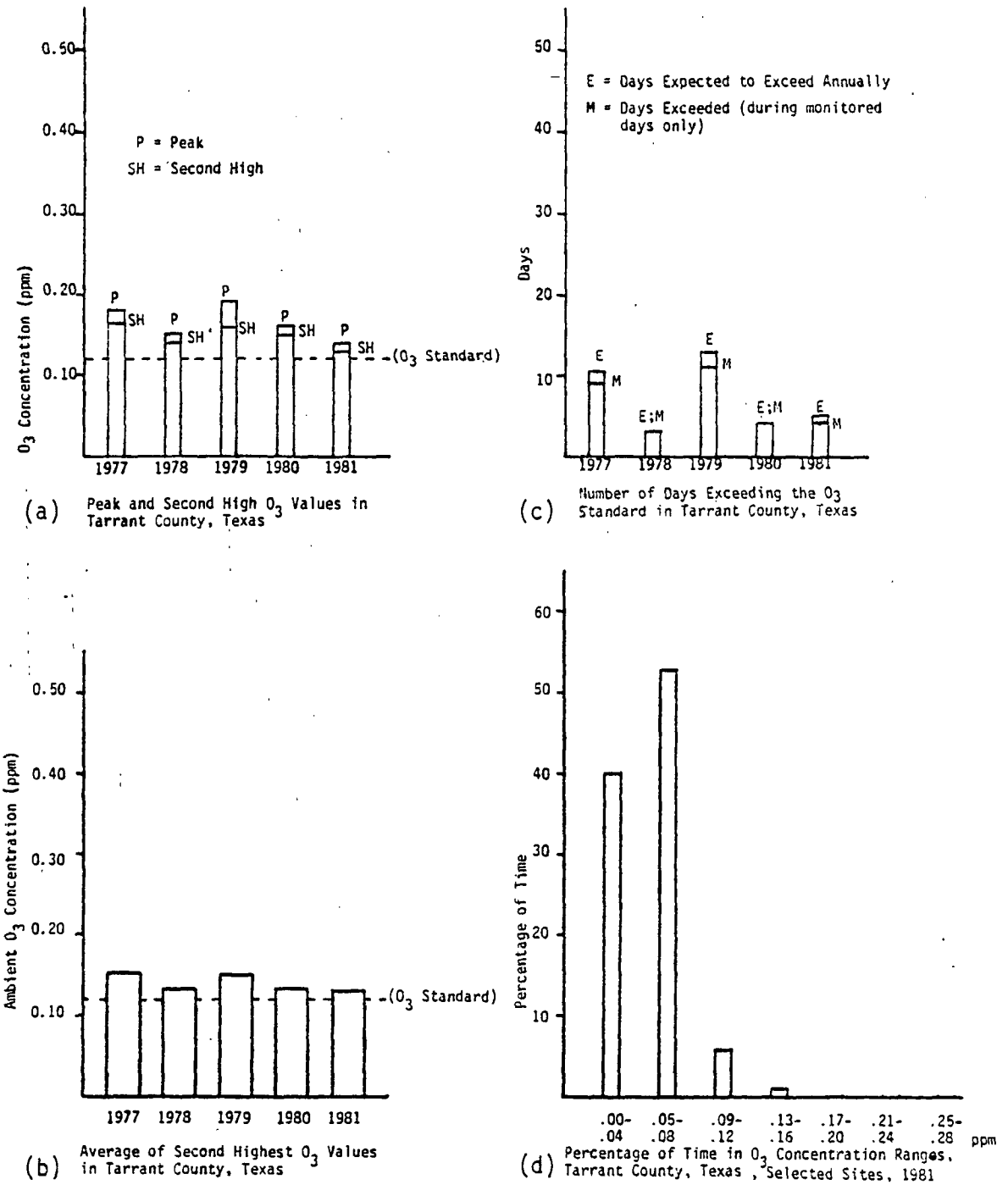


FIGURE 4 - Ozone - Tarrant County, Texas

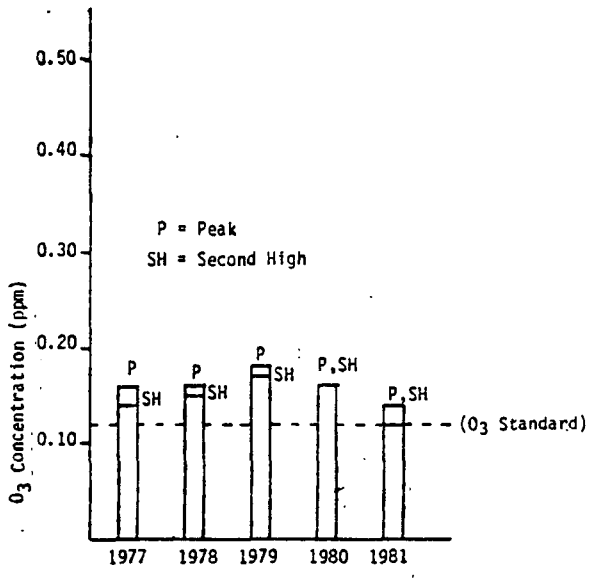
coating operations. The ambient data clearly show that Tarrant County has not attained the O_3 standard. Population growth in this area may have contributed to increased emissions since Tarrant County experienced about 2.3 percent population increase from 1977 to 1982 with a 1.15 percent annual growth rate.

° El Paso County (El Paso), Texas: The O_3 air quality in El Paso has improved slightly over the past 3 years as shown in Figure 5a. The peak O_3 value recorded from 1977 to 1981 was .180 ppm in 1979 and the lowest was .140 ppm in 1981. The State's data indicate that the highest value recorded during the first half of 1982 was .140 ppm. The second high O_3 values from the monitoring sites in El Paso County, averaged each year, include values ranging from .120 ppm to .160 ppm with no apparent trend (Figure 5b). Figure 5c shows that the number of days expected to exceed the standard increased from 1977 to 1979, leveled off in 1980 and decreased in 1981 to only one exceedance. One exceedance was reported by the State during the first 2 quarters of 1982. Of the time O_3 was measured in 1981, 99 percent of the time was at levels less than the .12 ppm standard (Figure 5d).

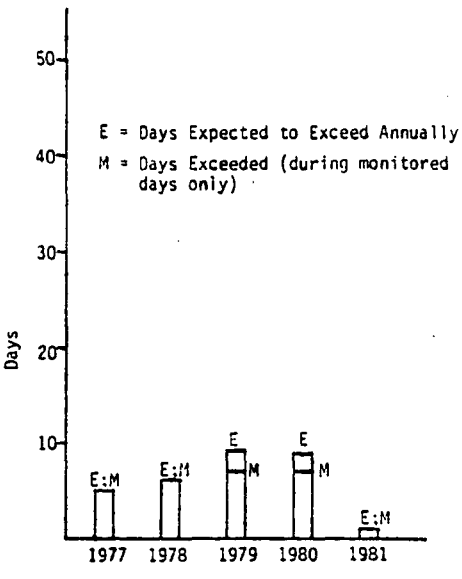
Figure 9 shows the contribution of VOC emissions from mobile and stationary sources. The area's major stationary sources of VOC emissions include: storage, transportation and marketing of petroleum products, miscellaneous solvent use and petroleum refineries. The 1979 SIP demonstrated that the major reductions in VOC emissions would be from the Federal Motor Vehicle Control Program and stationary sources such as petroleum refineries.

The 1979 Texas SIP demonstrated attainment for this area by December 31, 1982, however, the ambient data show that El Paso did not attain the standard. There was very little population growth or industrial growth during this time. Furthermore, all of the seven major stationary sources of VOC are in compliance with the State's regulations. It appears that the contribution of emissions from Juarez, Mexico located just across the border, may have a significant impact on the El Paso area.

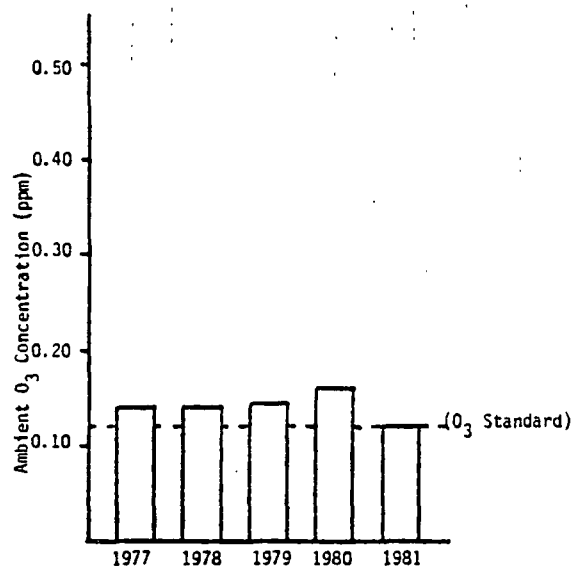
° New Orleans, Louisiana: The New Orleans urban area (Orleans, Jefferson, and St. Bernard Parishes) has experienced a few violations of the O_3 standard in recent years. This analysis focuses on Orleans Parish since there is insufficient data to show trends over 5 years for the Jefferson and St. Bernard Parishes. Figure 6a shows that O_3 levels in Orleans Parish have started a slight downward trend as there were no violations in 1981. However, in the first 3 quarters of 1982 there was one violation with a peak value of .132 ppm. An O_3 monitor was established in Jefferson Parish in 1982 and in St. Bernard Parish in 1981 to establish the O_3 levels in these Parishes. The peak O_3 value in Jefferson Parish through September 1982, was .188 ppm with six observations above the O_3 standard. Louisiana has indicated that this monitor may need to be relocated as local facilities may be impacting the monitor. St. Bernard Parish had one observation (.142 ppm) in the first 3 quarters



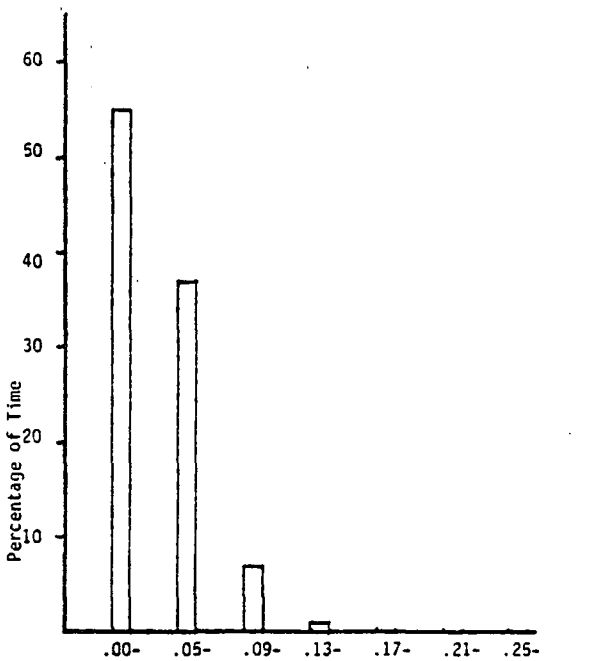
(a) Peak and Second High O_3 Values in El Paso County, Texas



(c) Number of Days Exceeding the O_3 Standard in El Paso County, Texas



(b) Average of Second Highest O_3 Values in El Paso County, Texas



(d) Percentage of Time in O_3 Concentration Ranges, El Paso County, Texas, Selected Sites, 1981

FIGURE 5 - Ozone - El Paso County, Texas

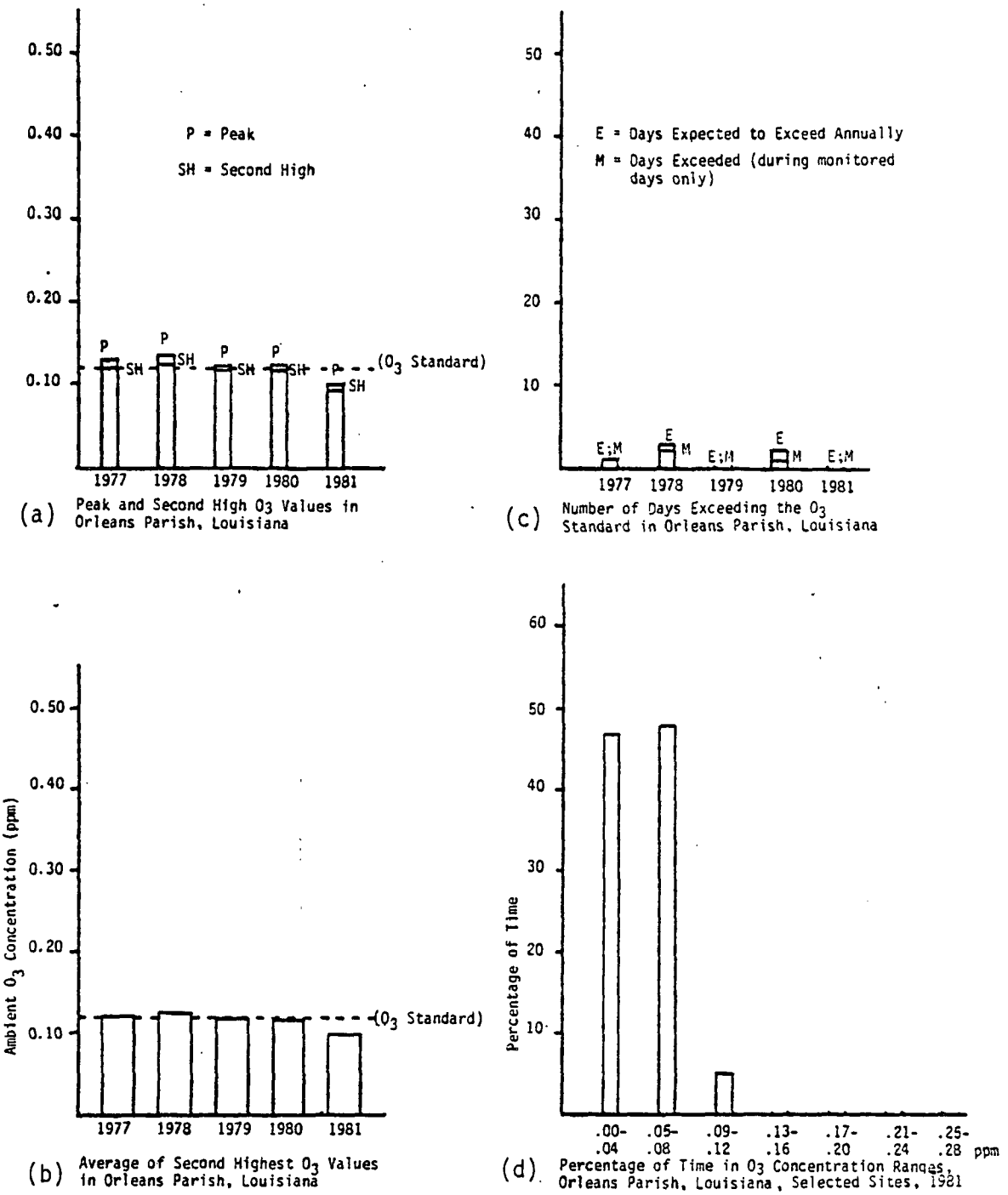


FIGURE 6 - Ozone - Orleans Parish, Louisiana

of 1982 above the standard and none in 1981. Figure 6c showing the number of days expected to exceed the standard does not show any clear trend.

Figure 9 shows the contribution of VOC emissions from mobile and stationary sources in Orleans Parish, indicating that approximately 70 percent are from stationary sources. There are 34 major stationary VOC sources in New Orleans, one source is not in compliance with applicable State regulations. This source has been issued a compliance order to be in compliance by April 1, 1983. The major stationary sources of VOC emissions include storage, transportation and marketing of petroleum products and industrial processes.

The 1979 SIP projected attainment of the O_3 standard for the New Orleans urban area, including Orleans Parish, with reductions expected primarily from controls placed on miscellaneous solvent uses, such as degreasing operations. The ambient data, particularly from 1982, show the urban area did not attain the standard. Although population increases (annual growth rate of .9 percent from 1977 to 1982) may have contributed to increased emissions, reductions in emissions in late 1982 and 1983 will be needed for the New Orleans urban area to attain and maintain the O_3 standard.

° Baton Rouge, Louisiana: O_3 levels in the Baton Rouge urban area (including East and West Baton Rouge Parishes) have fluctuated over the past few years. This analysis focused on East Baton Rouge since there is no monitor in West Baton Rouge. The peak O_3 level during 1978 to 1981 occurred in 1980 and was .218 ppm (Figure 7a). In the first 3 quarters of 1982, seven observations were above the O_3 standard with a peak of .185 ppm. As shown in Figures 7b and 7c, the average second highest values and the number of days exceeding the standard also varied from year to year, with no apparent trend. There were two days exceeded in 1979 but there were twenty-five in 1978 and eleven in 1980. Of the time O_3 was measured in 1981, 96 percent was at levels less than the .12 ppm standard (Figure 7d).

Figure 9 shows the contribution of VOC emissions from mobile and stationary sources in the Baton Rouge area. Approximately 70 percent are from stationary sources. The major contributors are industrial processes and petroleum refineries. Louisiana has implemented additional controls beyond reasonably available control technology (RACT) on several processes to lower VOC emissions from stationary sources.

The 1979 SIP projected attainment of the O_3 standard in the Baton Rouge area. The SIP showed that the major reductions in VOC emissions would be from stationary source controls. The ambient data show that this area did not attain the O_3 standard. The State believes that the area's meteorology contributes to the O_3 levels. However, VOC control regulations did not become effective until the end of 1982. It should be noted that 24 of the 28 major stationary sources in the Baton Rouge urban area, or 86 percent are currently in compliance with clean air regulations. Of the 4 sources out of compliance, 2 have been issued notices of violation (NOV) and the other 2 will have an NOV issued to each soon.

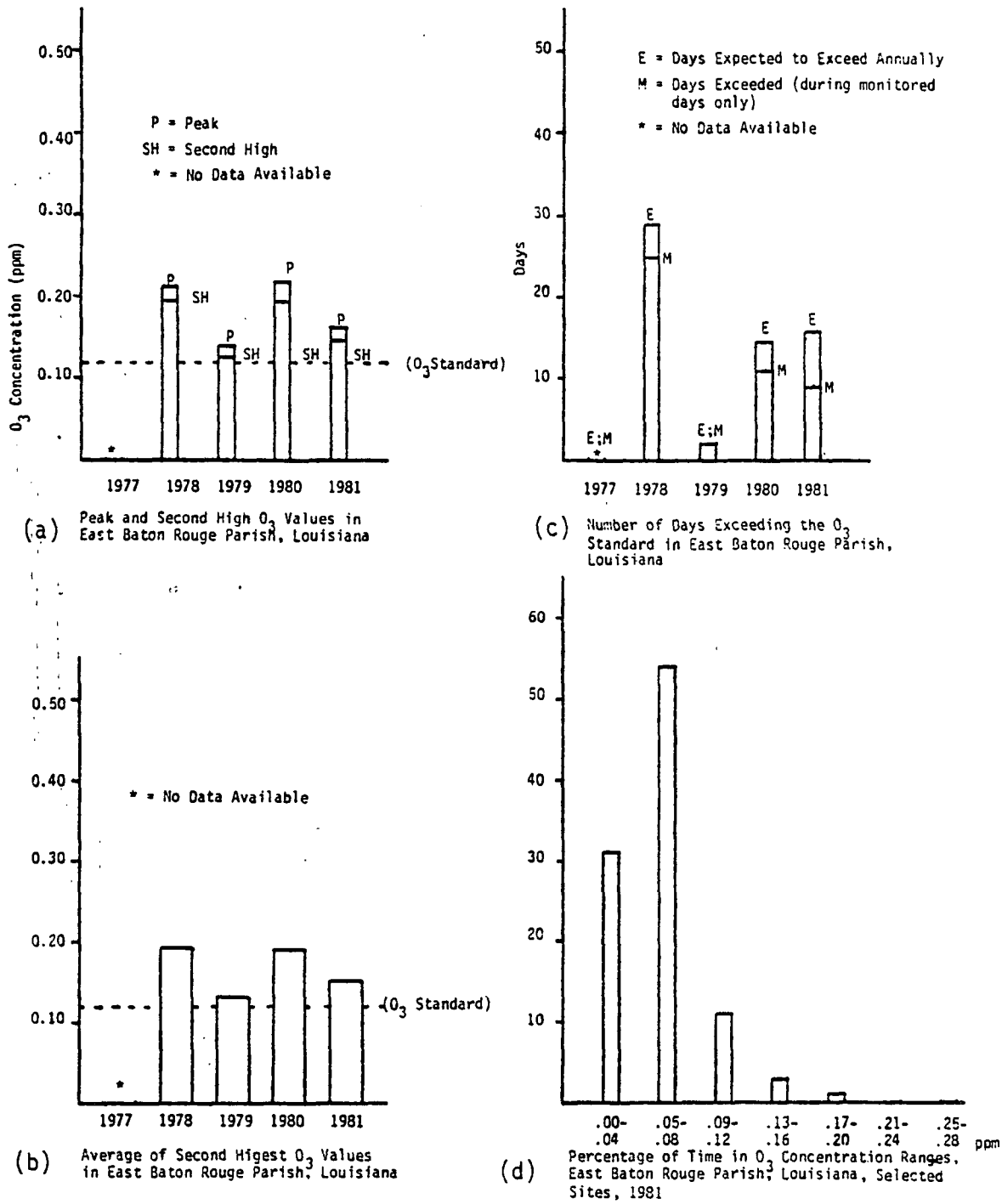


FIGURE 7 - Ozone - East Baton Rouge, Louisiana

° Tulsa, Oklahoma: O_3 air quality has improved slightly in Tulsa County, although the peak and second highest values for every year since 1977 are higher than the standard (Figure 8a). The peak O_3 value recorded from 1977 to 1981 was .201 ppm in 1980 and the lowest was .145 ppm in 1977. The average second high value remained about the same (Figure 8b). The Tulsa area has experienced several violations of the ozone standard in recent years, as shown in Figure 8c. Of the time O_3 was measured in 1981, 99 percent was at levels less than the .12 ppm standard as shown in Figure 8d.

Figure 9 shows the contribution of VOC emissions from mobile and stationary sources. The area's major stationary sources of VOC emissions include: storage, transportation and marketing of petroleum products, industrial processes and other solvent usage. Of the 17 major industrial air pollution sources in Tulsa, all are currently in compliance with clean air regulations.

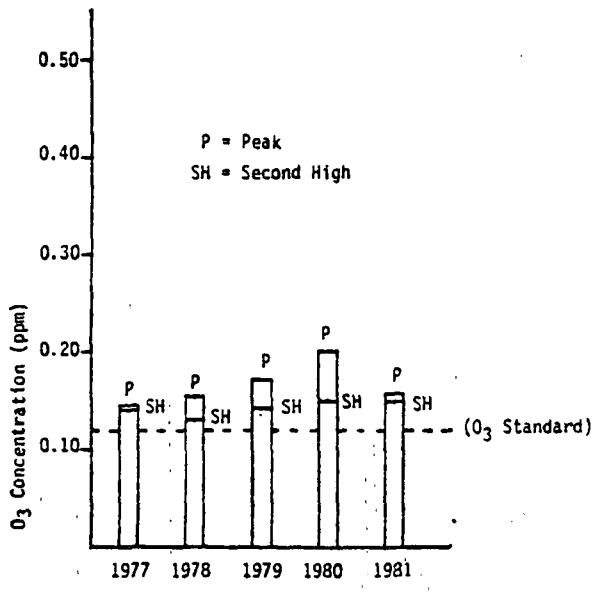
The 1979 Oklahoma SIP demonstrated attainment for this area by December 31, 1982. The 1979 SIP showed that the major reduction in VOC emissions would be from the Federal Motor Vehicle Control Program and stationary source controls of such sources as petroleum refineries. The number and severity of violations has decreased since then but the area is not yet in attainment and is not predicted to attain by the December 31, 1982, deadline. It is not clear what factors may have contributed to the area's ambient O_3 levels. There has been some population growth in the County, as shown by an annual growth rate of .84 between 1977 and 1982, which would correspond to a growth in area emissions from such sources as dry cleaners, etc.

° Rural Nonattainment Areas in Texas and Louisiana: Region 6 has several rural counties and parishes which are currently designated as nonattainment for O_3. Monitoring data indicate these areas may not be able to attain the O_3 NAAQS by December 31, 1982. These areas are: Brazoria, Galveston, Jefferson and Orange Counties, Texas and Calcasieu and Iberville Parishes, Louisiana. All of these areas have had several observations over the O_3 NAAQS in 1981 and/or 1982. However, these areas all have populations of less than 200,000 based on 1970 census data. Texas and Louisiana may be able to demonstrate that the high levels of O_3 in the rural areas are due to transport from nearby urban areas with high O_3 levels.

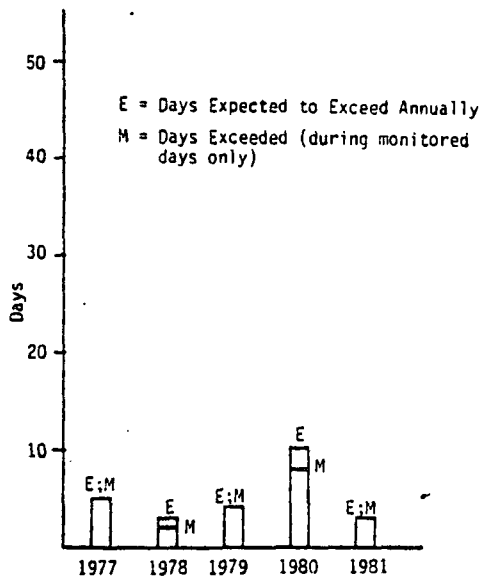
Principal Barriers:

The principal barrier to reducing the extent of the O_3 problem in Region 6 is our lack of full understanding of the mechanisms involved in producing and affecting high O_3 levels in Region 6. This results in a limited ability to predict how application of control strategies will affect future levels of O_3. The current O_3 modeling technique (city specific Emperical Kenetic Modelling Approach, EKMA) is a significant improvement over the previous rollback methods, but what is really needed is the much more sophisticated airshed models to be validated for areas in Louisiana and Texas.

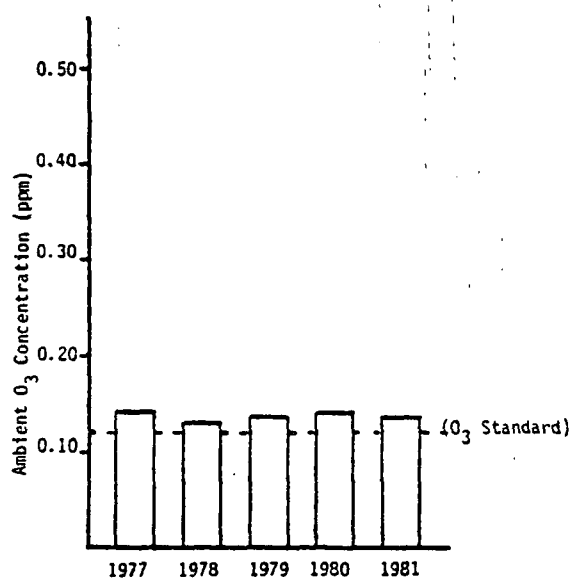
A barrier for reducing the ozone problem in El Paso, Texas is the uncertainty about the amount of VOC emission contribution from the Juarez, Mexico



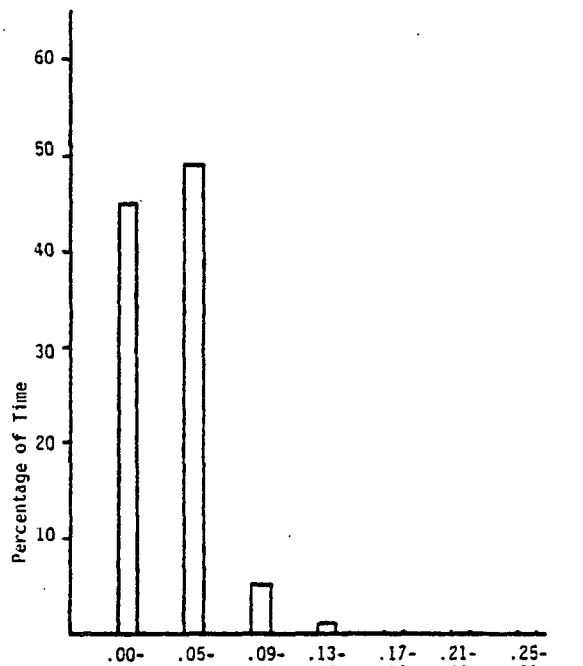
(a) Peak and Second High O_3 Values in Tulsa County, Oklahoma



(c) Number of Days Exceeding the O_3 Standard in Tulsa County, Oklahoma



(b) Average of Second Highest O_3 Values in Tulsa County, Oklahoma



(d) Percentage of Time in O_3 Concentration Ranges, Tulsa County, Oklahoma, Selected Sites, 1981

FIGURE 8 - Ozone - Tulsa County, Oklahoma

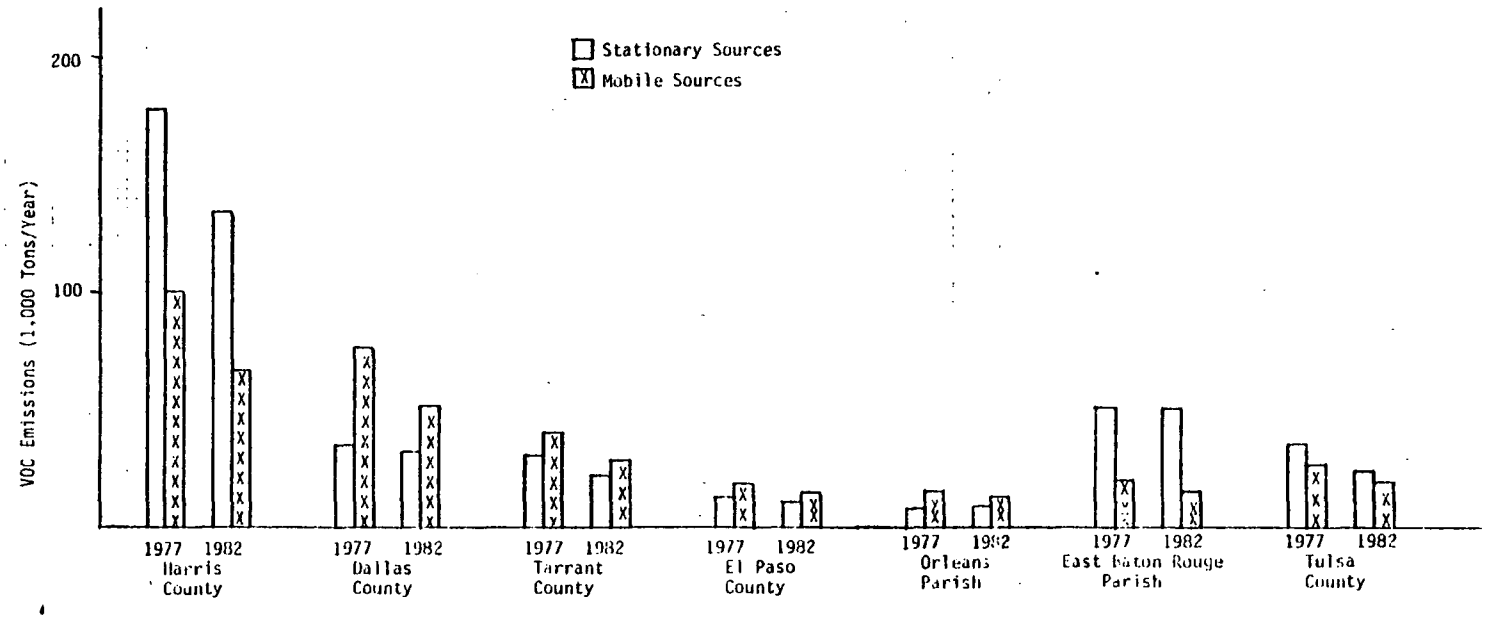


FIGURE 9 - Ozone - Volatile Organic Compound Emissions for Ozone Problem Areas, 1977 and 1982

border area. International policy decisions will need to be made to determine the impact of these emissions on air quality and to develop appropriate control strategies.

Implications for Agency Management:

State Actions: Active participation by Texas and Louisiana in the validation and application of O_3 airshed models is needed in order to better understand O_3 formation and to identify future control strategies.

The State of Louisiana has committed to perform a monitoring study during the 1983 O_3 season to evaluate the O_3 site in Jefferson Parish since it may be influenced by local facilities.

Regional Actions: The Regional office is assisting the States of Texas, Louisiana and Oklahoma in their review and analysis of the ambient data and control strategies in the significant O_3 problem areas discussed above.

Requested Actions from Headquarters: More basic research is needed into the cause of O_3 formation in Region 6 and the further development and application of O_3 airshed models here.

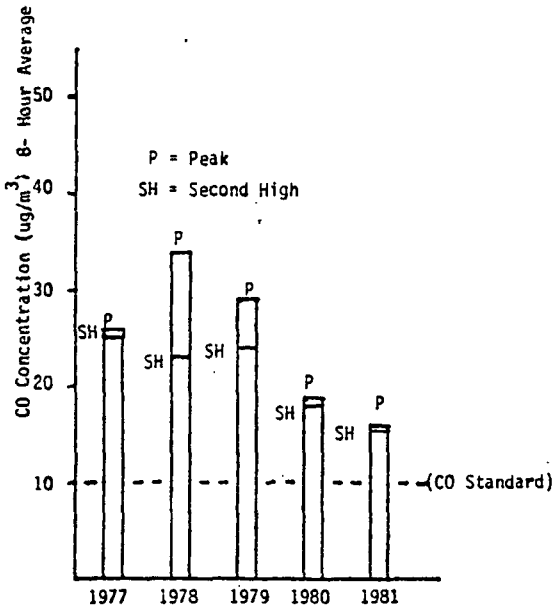
Headquarters needs to work with the Mexican government toward reduction of air pollution especially in border cities such as Juarez and to get emission inventories from such areas so that U.S. cities may better plan for air pollution reductions in their areas.

Carbon Monoxide Problem Areas:

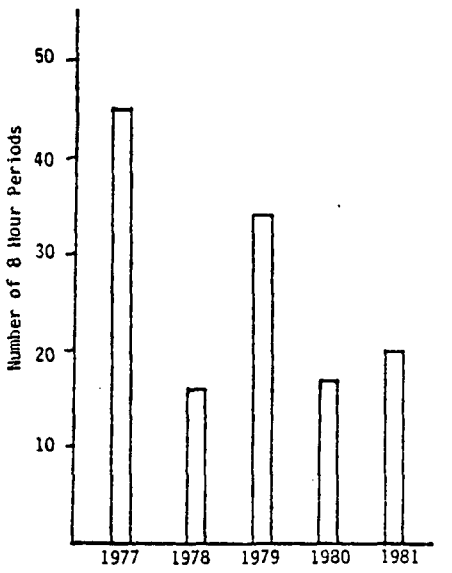
° Albuquerque, New Mexico: Albuquerque (Bernalillo County), New Mexico has received an extension until December 31, 1987, to bring the area into attainment with the CO standard. The Albuquerque area has consistently experienced numerous violations of the CO standard and alert levels in recent years, usually in the winter months. Figure 10a shows that the peak values of CO have decreased since 1978. However, a new monitoring site was established in 1981. This site began operation in time to collect data during the last quarter of 1981, and data showed 61 8-hour periods were over the CO standard with a peak value of 26.0 mg/m_3. This is a new "hot spot" which should be closely watched.

The second high CO values from the monitoring sites in Bernalillo County, excluding the new site, averaged over each year, show a downward trend from 1979 through 1981 (Figure 10b). The number of 8-hour periods with values exceeding the standard (Figure 10c) has decreased in general over the 5-year period, 1977-1981, but with yearly fluctuations. Of the time CO was measured in 1981, 99 percent was at levels less than the 9 ppm 8-hour standard as shown in Figure 10d.

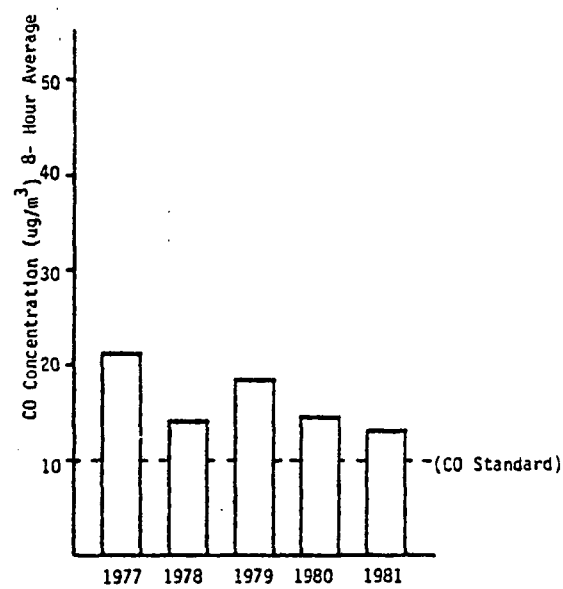
The Albuquerque - Bernalillo County Air Quality Control Board submitted a plan demonstrating how the area would attain the standard. Since 90 percent of the CO emissions are from motor vehicles; these sources are the primary ones to be controlled. Modeling demonstrated that a 59 percent reduction in emissions is needed to attain the standard. This will be accomplished through the Federal Motor Vehicle Control Program (47 percent reduction), and a vehicle I/M program for all light duty vehicles registered in the



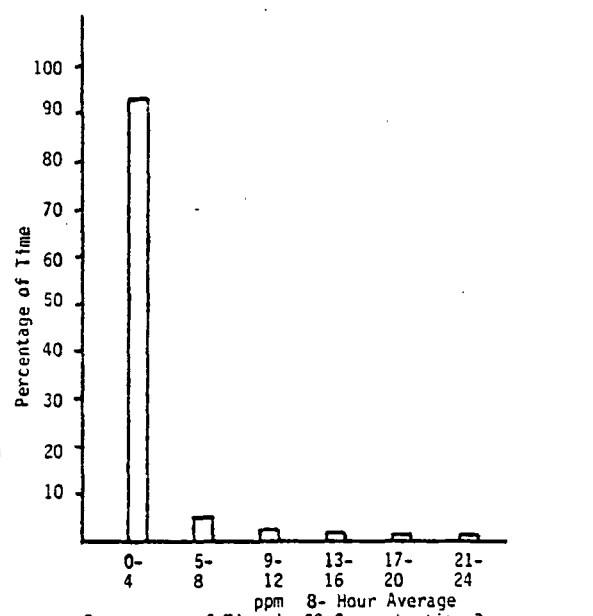
(a) Peak and Second Highest CO Values in Bernalillo County, New Mexico



(c) Number of 8 Hour Periods in Which the CO Standard Was Exceeded in Bernalillo County, New Mexico



(b) Average Second Highest CO Values in Bernalillo County, New Mexico



(d) Percentage of Time in CO Concentration Ranges, Bernalillo County, New Mexico, Selected Sites, 1981

FIGURE 10 - CO - Bernalillo County, New Mexico

City of Albuquerque and in areas outside of other municipalities in Bernalillo County (12 percent reduction). The plan will also include transportation control measures (TCMs) such as ridesharing and traffic flow improvement (6 percent reduction).

° El Paso, Texas: The City of El Paso has experienced several exceedances of the CO standard in 1981, as shown in Figure 11a. This figure implies CO levels have increased slightly although there are yearly variations. The peak 8-hour CO value in 1977 was 11.9 mg/m^3 and in 1981 it was 18.1 mg/m^3. The number of 8-hour periods containing a value over the standard has increased; 1977 included one period and 1981 had 8 periods exceeding the standard (Figure 11c). The second high CO values from the monitoring sites in El Paso County, averaged over each year, show an upward trend from 1977 through 1981 (Figure 11b). Of the time CO was measured in 1981, 99 percent was at levels less than the 9 ppm 8-hour standard as shown in Figure 11d.

Approximately 99 percent of the CO emissions are from mobile sources. The 1979 Texas SIP demonstrated attainment with the standard by December 31, 1982 through the Federal Motor Vehicle Control Program. The SIP projected a reduction of approximately 20,000 tons per year of CO emissions by December 31, 1982. The ambient data clearly show that El Paso has not attained the CO standard. It is possible that air quality in El Paso has not improved due to the contribution of CO emissions from Juarez, Mexico.

Principal Barriers:

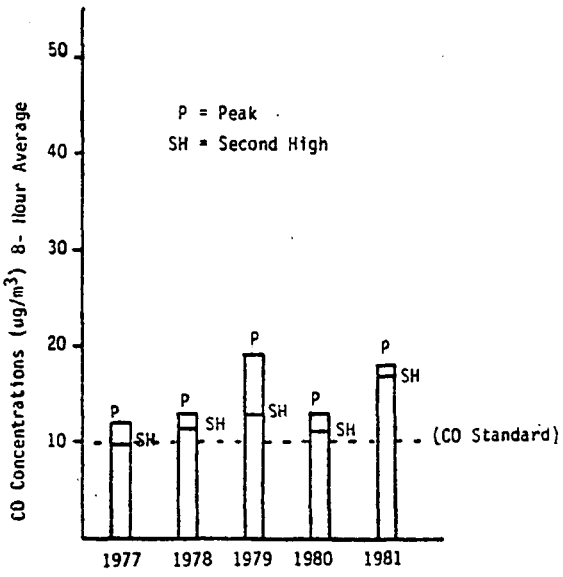
The principal barrier to reducing the CO problem in El Paso is the uncertainty about the amount of CO emission contribution from the Juarez, Mexico border area. There are international policy decisions that will need to be made to determine the impact of these emissions on air quality and to develop appropriate control strategies.

Implications for Agency Management:

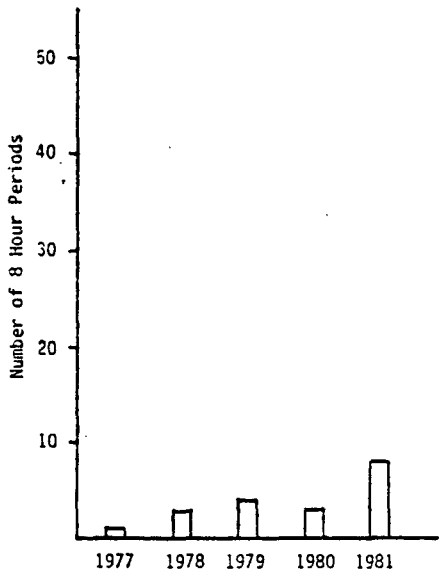
State Actions: Albuquerque, New Mexico: The State of New Mexico has submitted a plan for reducing the CO levels by December 31, 1987. The City of Albuquerque is currently operating an I/M program and implementing TCMs.

El Paso, Texas: The State of Texas is completing a study of the air quality in El Paso, Texas. The study is expected to be completed in 1983 and may recommend additional controls for reducing CO emissions in the area.

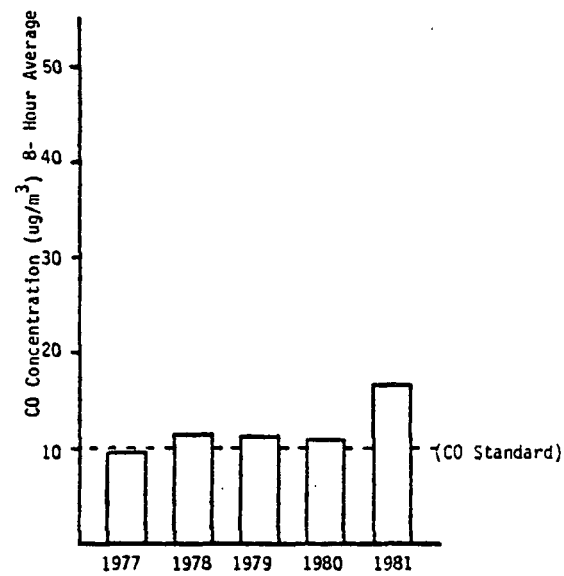
Regional Actions: The Regional office will work closely with the City of Albuquerque to ensure the I/M program results in the projected emissions reductions. For the El Paso area, the Regional office will review the State's study of air quality in El Paso and will work with the State in developing appropriate controls or in targeting specific areas for additional study.



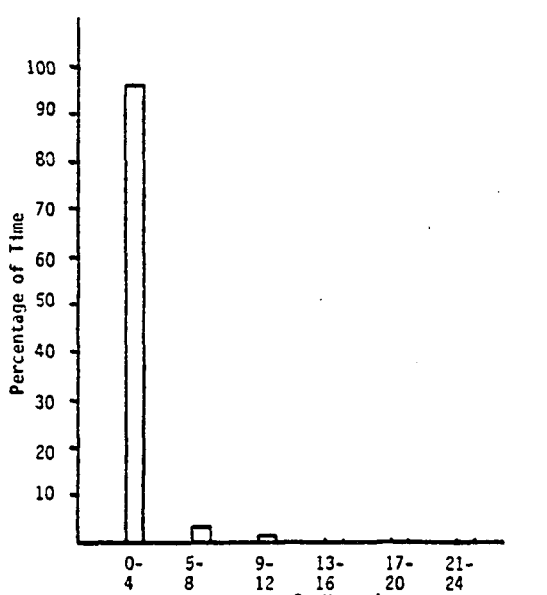
(a) Peak And Second Highest CO Values in El Paso County, Texas



(c) Number of 8 Hour Periods in Which the CO Standard was Exceeded in El Paso County, Texas



(b) Average Second Highest CO Values in El Paso County, Texas



(d) Percentage of Time in CO Concentration Ranges, El Paso County, Texas, Selected Sites, 1981

FIGURE 11 - CO - El Paso County, Texas

Requested Actions from Headquarters: Work with the Mexican government to obtain emission inventories from border areas so that U.S. cities may better plan for air pollution reduction in their areas. EPA also needs to work with the Mexican government to determine whether both countries should develop and implement control strategies to reduce emissions in border cities.

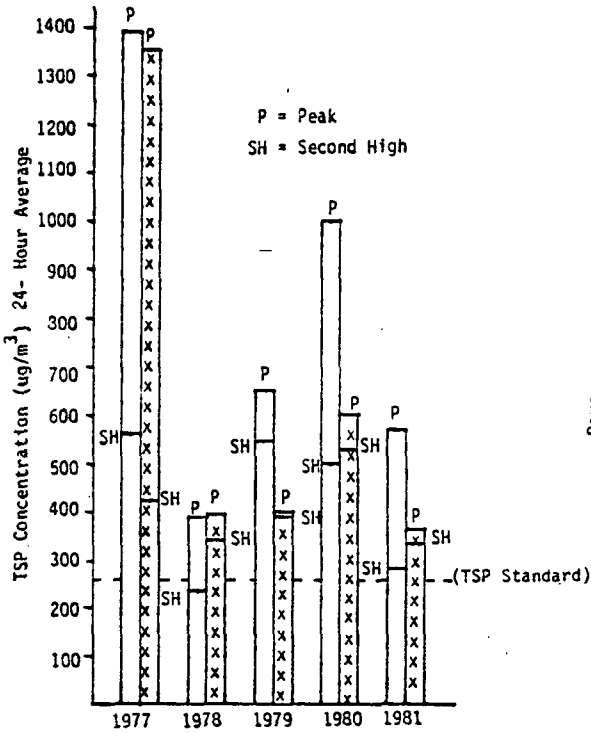
Total Suspended Particulate Problem Areas:

° Texas: The State of Texas has four counties which contain nonattainment areas that will not attain the TSP standard by December 31, 1982. These counties are Harris, El Paso, Cameron and Nueces.

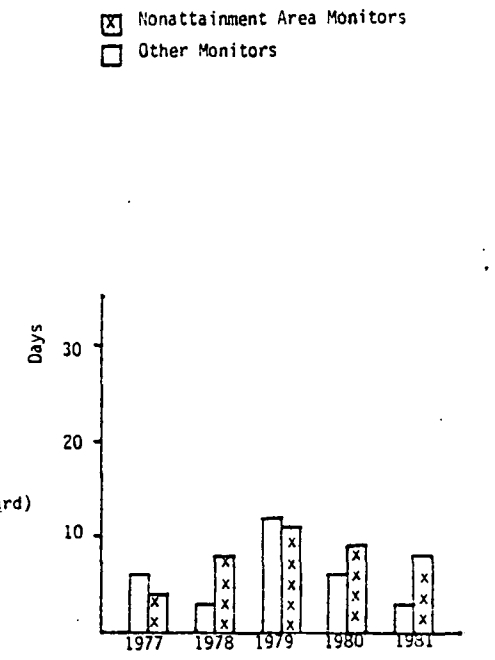
Harris County has two areas designated as nonattainment for total suspended particulates (TSP). One area (Houston #1) is considered not to have attained the TSP standard by December 31, 1982, since there is no approved SIP in place for this area and ambient monitoring shows violations of the standard in this area. The other area is expected to attain the standard by the December 31, 1982 deadline. Figure 12a shows the peak and second high 24-hour average TSP values for the nonattainment area and the county as a whole, for the years 1971 through 1981. These values include dust storm days which generally measured extremely high values, however, removal of the dust storm days will not decrease the peak values Figures 12-15. These days occur infrequently during the year. When the high values are from wind blown dust and the particle size is usually larger. The tentative inhalable particulate (IP) standard will probably exclude the dust storm values because of the particle size criteria that will be included in the standard.

The second high values from the nonattainment area and attainment areas were each averaged over each year and are presented in Figured 12b. Of the time TSP was measured in 1981, 91 percent of the time was at levels less than the 260 ug/m^3, 24-hour standard (Figure 12d). One source (a steel facility) has been identified as the major cause of the problem in the nonattainment area. The State, City, EPA and the source are presently developing a consent decree that will establish reasonably available control technique (RACT) requirements for this source.

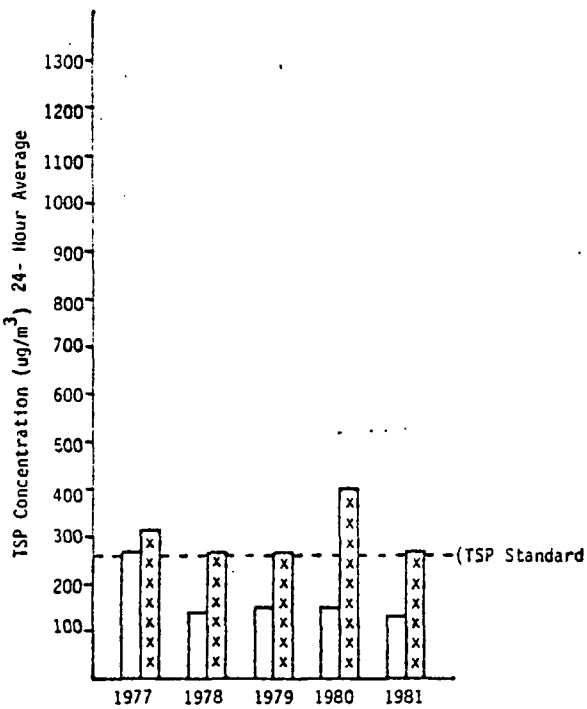
El Paso County has one area designated as nonattainment, El Paso #1, for TSP, that will not attain the TSP standard by December 31, 1982. Figure 13a shows the peak and second highest TSP values in the nonattainment area as compared to attainment areas of El Paso County. The very high levels in 1977, 1978 and 1979 are due to an improperly sited monitor. The monitor has since been properly sited, however, it still has values over the standard. The new monitoring site was not included in Figure 13 as it did not satisfy the data completeness criteria for inclusion of a monitoring site (see Part II, Air Quality Problems). As in Harris County, dust storms add to the high levels of particulate matter and the new IP standard should help to eliminate wind blown dust from arid lands in West Texas being classified as a problem. Of the time TSP was measured in 1981, 95 percent was at levels less than the 260 ug/m^3, 24-hour standard as shown in Figure 13d.



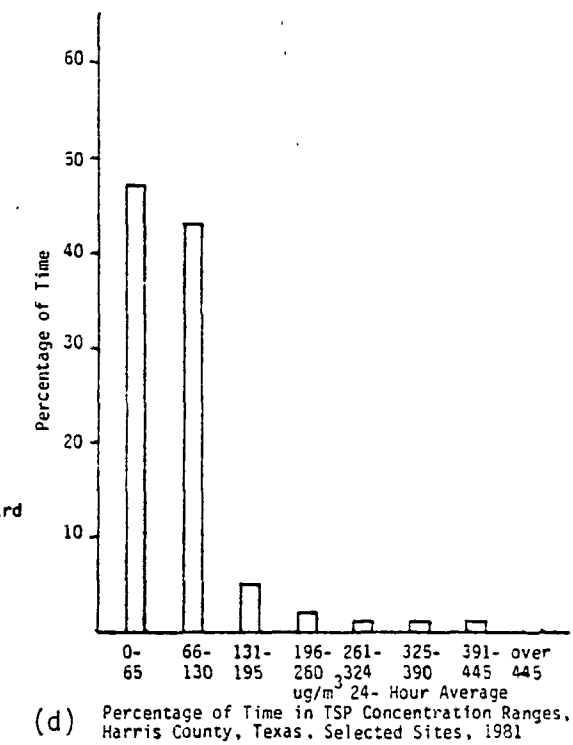
(a) Peak and Second Highest TSP Values in Harris County, Texas



(c) Number of Days Above the TSP Standard in Harris County, Texas

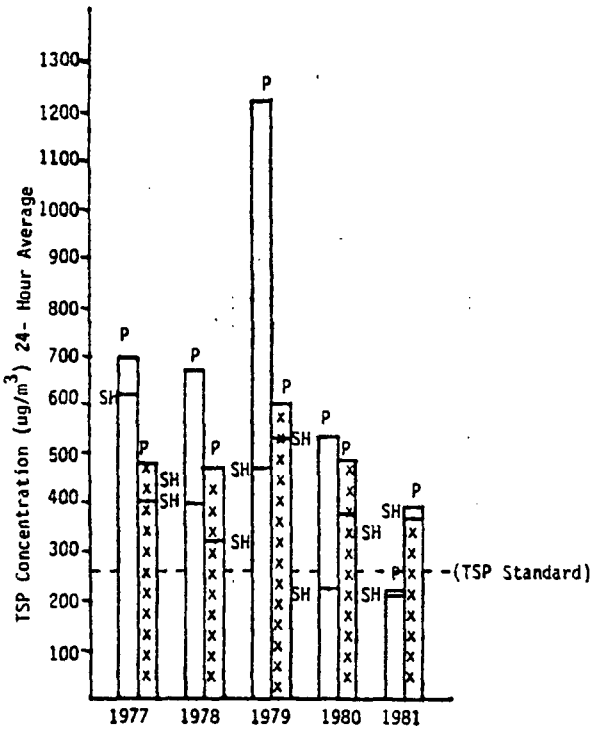


(b) Average of Second Highest TSP Values in Harris County, Texas

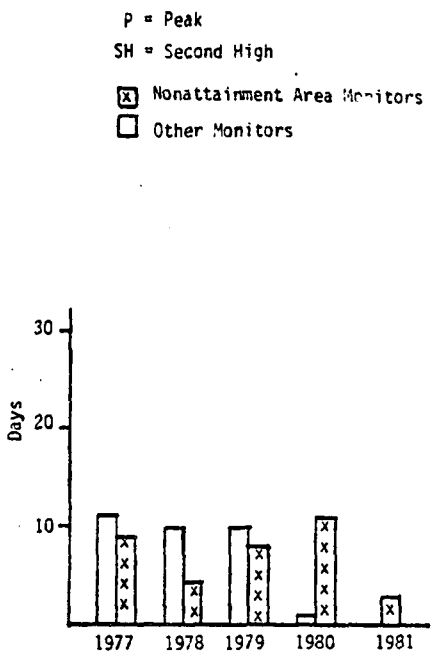


(d) Percentage of Time in TSP Concentration Ranges, Harris County, Texas, Selected Sites, 1981

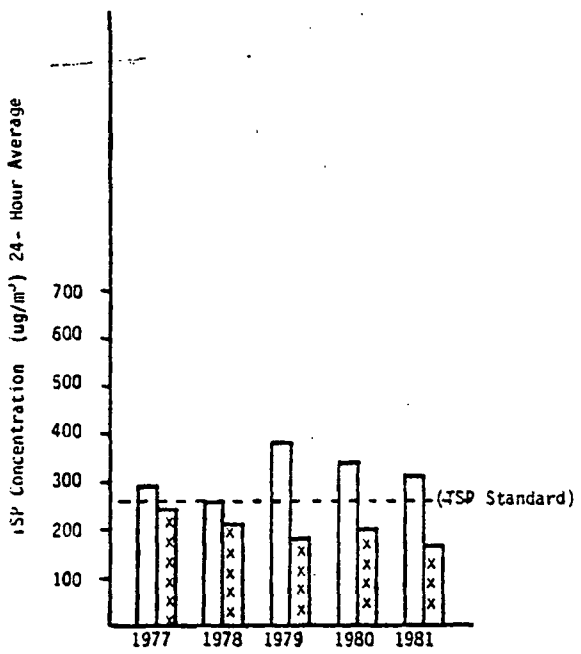
FIGURE 12 - TSP - Harris County, Texas



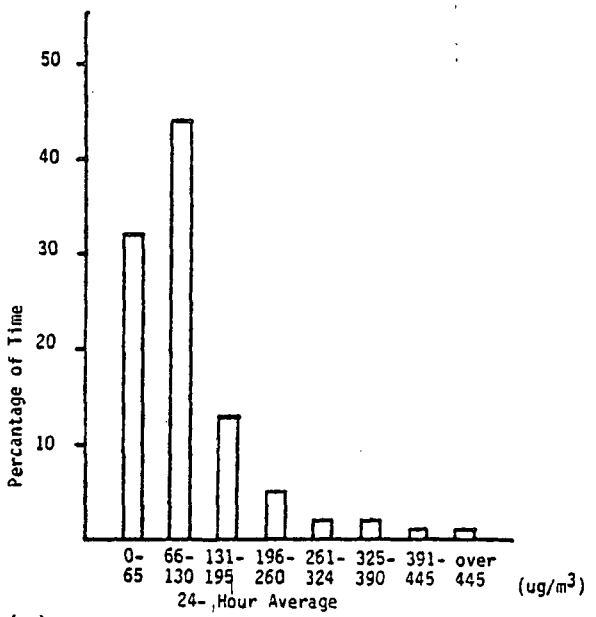
(a) Peak and Second High TSP Values in El Paso County, Texas



(c) Number of Days Above the TSP Standard in El Paso County, Texas



(b) Average of Second Highest TSP Values in El Paso County, Texas



(d) Percentage of Time in TSP Concentration Ranges, El Paso County, Texas, Selected Sites, 1981

FIGURE 13 - TSP - El Paso County, Texas

According to the 1979 SIP, the State identified fugitive dust from wind erosion of arid lands, and unpaved parking lots and roads as the major causes for nonattainment. According to the 1977 emission inventory, approximately 33 percent of emissions are due to point sources, and 67 percent due to fugitive sources. Attainment in El Paso was to be achieved by December 31, 1982, through the application of controls for fugitive emissions, to the extent needed for attainment. However, the State of Texas has not provided information to EPA on the controls implemented or a demonstration of their effectiveness.

The nonattainment area in Cameron County is in the town of San Benito. Figure 14a shows the peak and second highest TSP values for each year (1977-1981). As can be seen by this figure, the nonattainment area in San Benito is the only monitored problem area in Cameron County. Particulate levels are shown to have decreased in San Benito since 1978. However, there has not been a monitor in the nonattainment area since 1980 and there was less than one half of a year of data reported for 1980 and 1979. Monitoring needs to be conducted in the nonattainment area to determine the status of this area.

According to the 1979 SIP, the State identified fugitive emissions from a grain storage elevator and cotton gin, and unpaved streets and parking lots as the major causes for nonattainment. According to the 1977 emission inventory, approximately 6 percent of the emissions are due to point sources, and 94 percent from fugitive sources. Attainment was to be achieved by December 31, 1982, through the application of controls for fugitive emissions, to the extent needed, and the agriculture facilities were to be brought into compliance through enforcement of SIP Regulation I, Control of Air Pollution From Visible Emission and Particulate Matter.

The designated nonattainment area in Nueces County that will not attain the TSP standard by December 31, 1982, is a portion of the city of Corpus Christi (Corpus Christi #1). The peak and second highest TSP values for each year, 1977-1981, are shown in Figure 15a. This figure shows TSP levels for the nonattainment area and the remainder (attainment portion) of the county. Air quality has been below the standard in the whole county since 1979. However, in the first two quarters 1982, monitoring data in the nonattainment area shows two 24-hour periods with values over the 260 ug/m^3 standard. The maximum values for the 2 periods are 320 and 265 ug/m^3. The nonattainment area has also been violating the annual geometric mean for TSP (75 ug/m^3) since 1977. The annual geometric means for the years 1977 to 1981 have ranged from 104 to 135 ug/m^3.

According to the 1979 SIP, the State identified fugitive emissions from roads and parking lots as the major causes for nonattainment. According to the 1977 emission inventory, all emissions are due to fugitive emissions. Attainment was to be achieved by December 31, 1982, through the application of controls for fugitive emissions to the extent needed. However, the State has not provided information to EPA on the controls implemented or their effectiveness.

° New Mexico: The State of New Mexico has two counties which contain nonattainment areas that will not attain the TSP standard by December 31, 1982; Bernalillo and Grant.

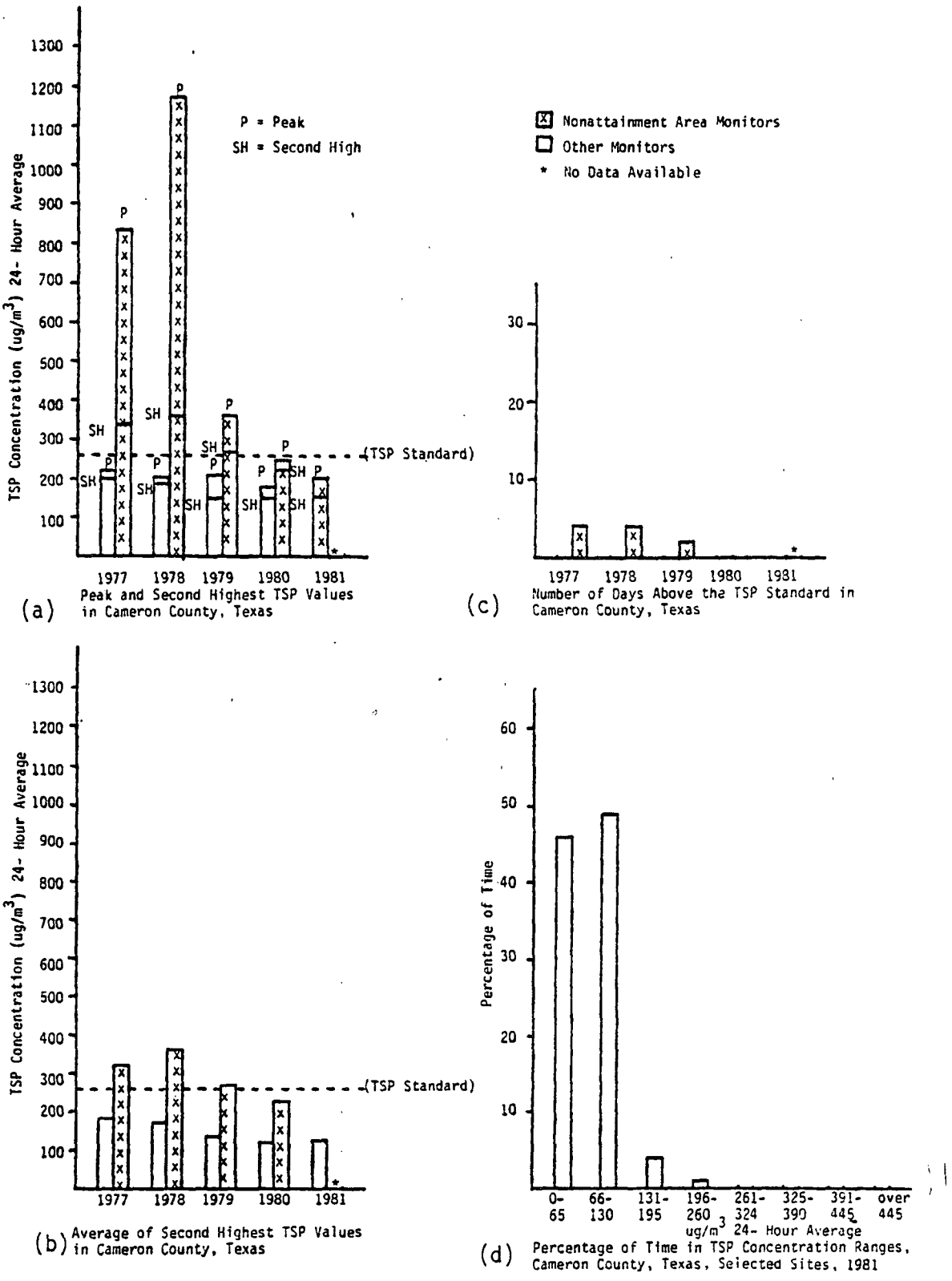


FIGURE 14 - TSP - Cameron County, Texas

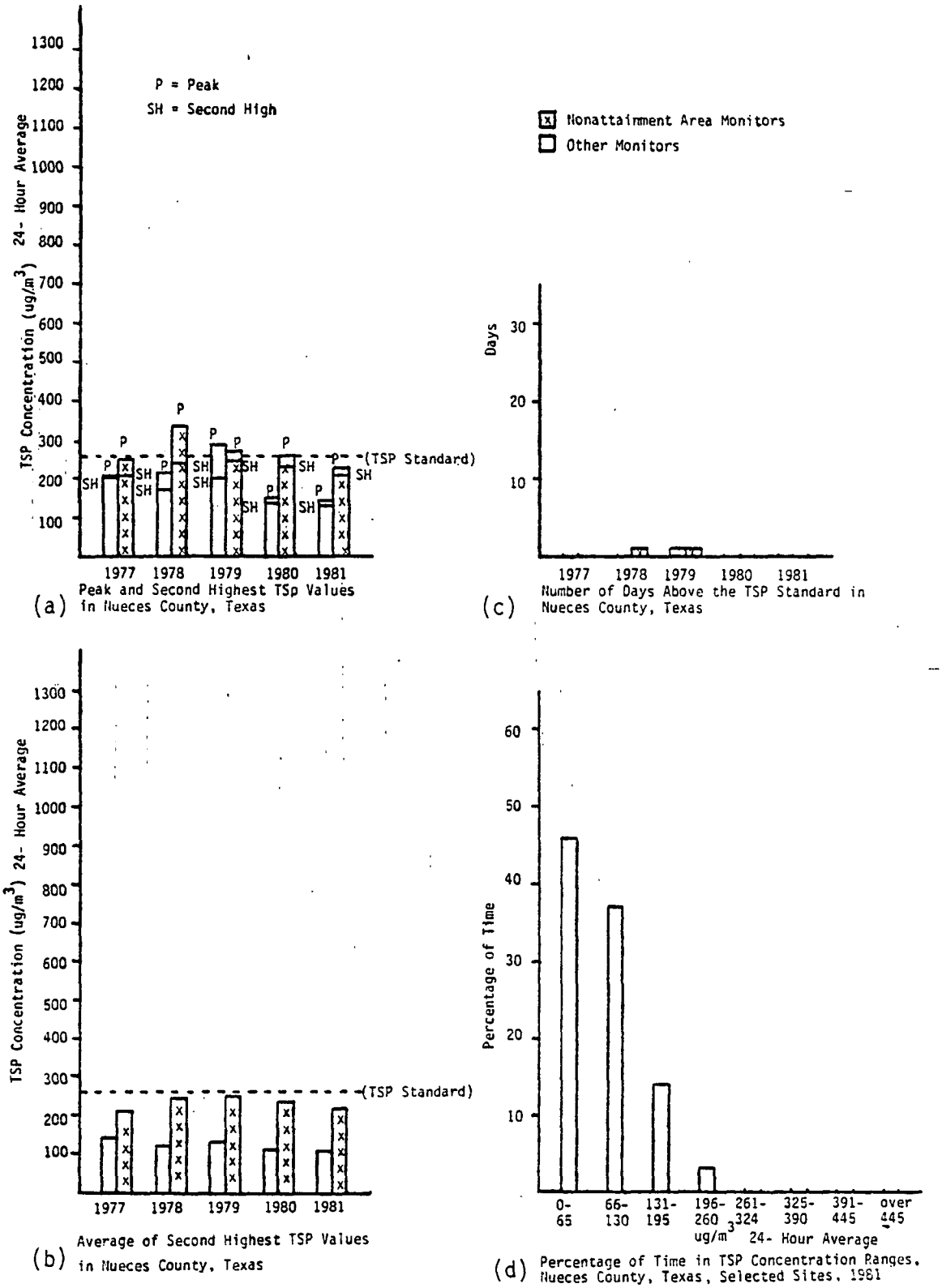


FIGURE 15 - TSP - Nueces County, Texas

Portions of the City of Albuquerque, Bernalillo County, do not meet the primary TSP standard and are designated as nonattainment areas. Figure 16a shows the peak and second highest TSP values for each year, 1977-1981, for the designated nonattainment areas and the attainment portions of Bernalillo County. The values for the county have varied over the years and do not show any trends. The nonattainment areas, which will not attain the TSP standard by December 31, 1982, consist of 2 areas approximately 3 square miles each, in Albuquerque. Both nonattainment areas had annual geometric mean (AGM) above the 75 ug/m^3 AGM standard in 1981. The values were 126 ug/m^3 and 101 ug/m^3. Figure 16c shows days above the standard in attainment and nonattainment portions of the county.

The sources of the high TSP values are not known at this time, but they are believed to be a mixture of fugitive dust from unpaved roads and parking lots and other fugitive emission sources. No strategy has been developed for reducing emissions although there is a continuing study of the problem in preparation for the inhalable particulate (IP) standard.

The other area in New Mexico that will not attain by December 31, 1982, is a portion of Grant County. Figure 17a shows the peak and second highest TSP values for each year, 1977-1981, for the nonattainment and attainment areas of Grant County. Monitoring data in the nonattainment area in 1979, 1980 and 1981 show TSP levels have not appreciably changed, with values well above the 75 ug/m^3 annual geometric mean standard.

The sources of emissions in the nonattainment area are a combination of fugitive emissions from roads in the City of Hurley and fugitive emissions from a copper smelter. Attainment was to be achieved by December 31, 1982, through the application of controls for fugitive emissions such as paving or coating roads and enclosing of fugitive sources in the copper smelter. The addition of controls to the copper smelter was completed the first of 1982 and the smelter shut down from May through October, 1982. Therefore, it is not known at this time what effect the controls will have when the smelter is operational, as no ambient data has been entered into NADB since the smelter began operations.

Principal barriers:

Principal barriers to reducing the extent of the TSP problem in Region 6 include the geography of the Region since a large portion of the region is characterized by arid lands with little vegetation. This allows wind blown dust to be a significant problem in this Region.

In addition, there is significant uncertainty about the proposed changes to the inhalable particulate (IP) standard and the impact it will have on the attainment status of the areas discussed above. There is also uncertainty about the influence of the smelter in New Mexico, on existing TSP levels, after application of controls.

Implications for Agency Management:

State Actions: Texas Counties: The State to Texas needs to reevaluate the 1979 control strategy and develop and/or apply additional controls for areas not attaining the standard, as necessary.

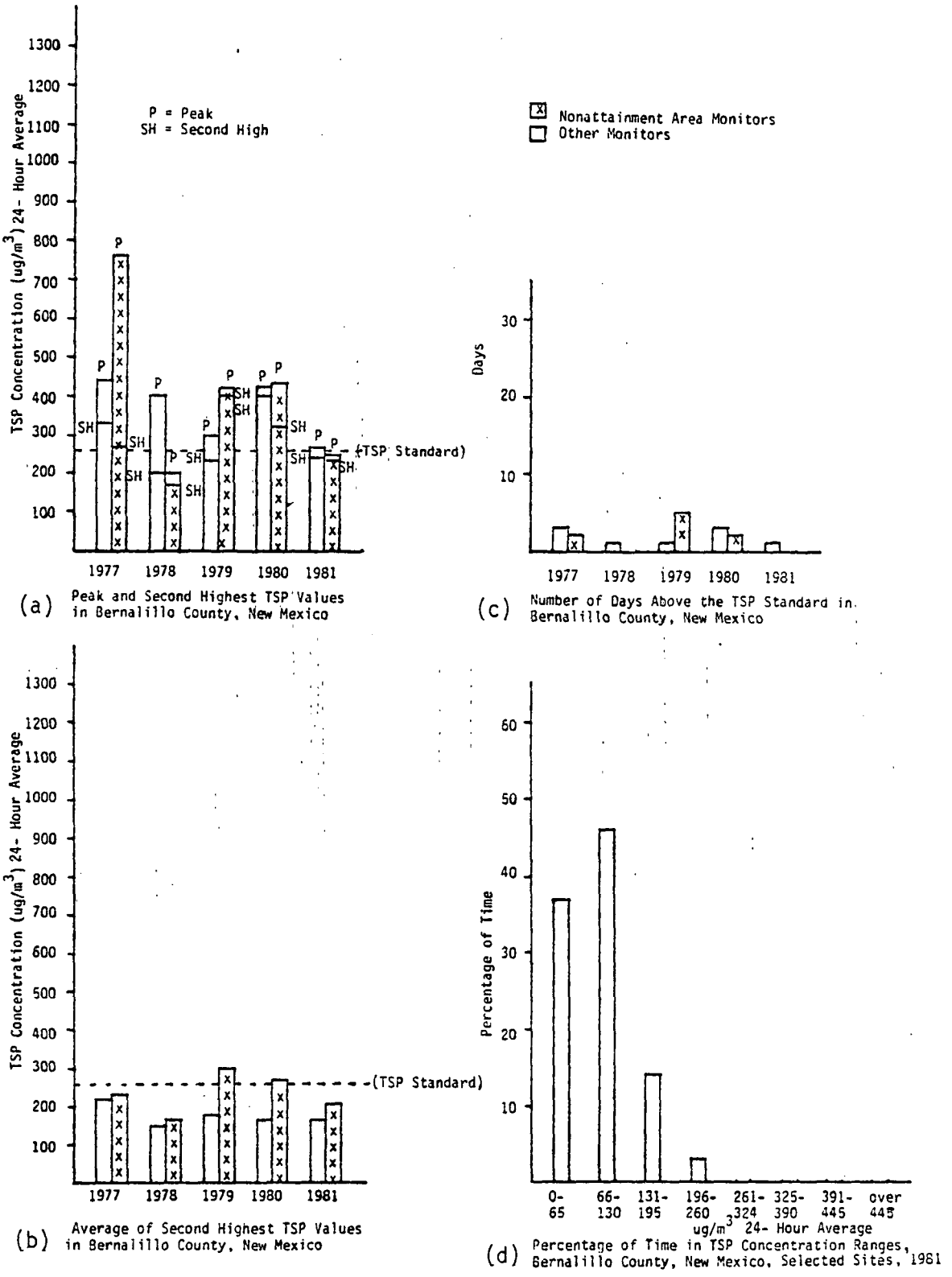


FIGURE 16 - TSP - Bernalillo County, New Mexico

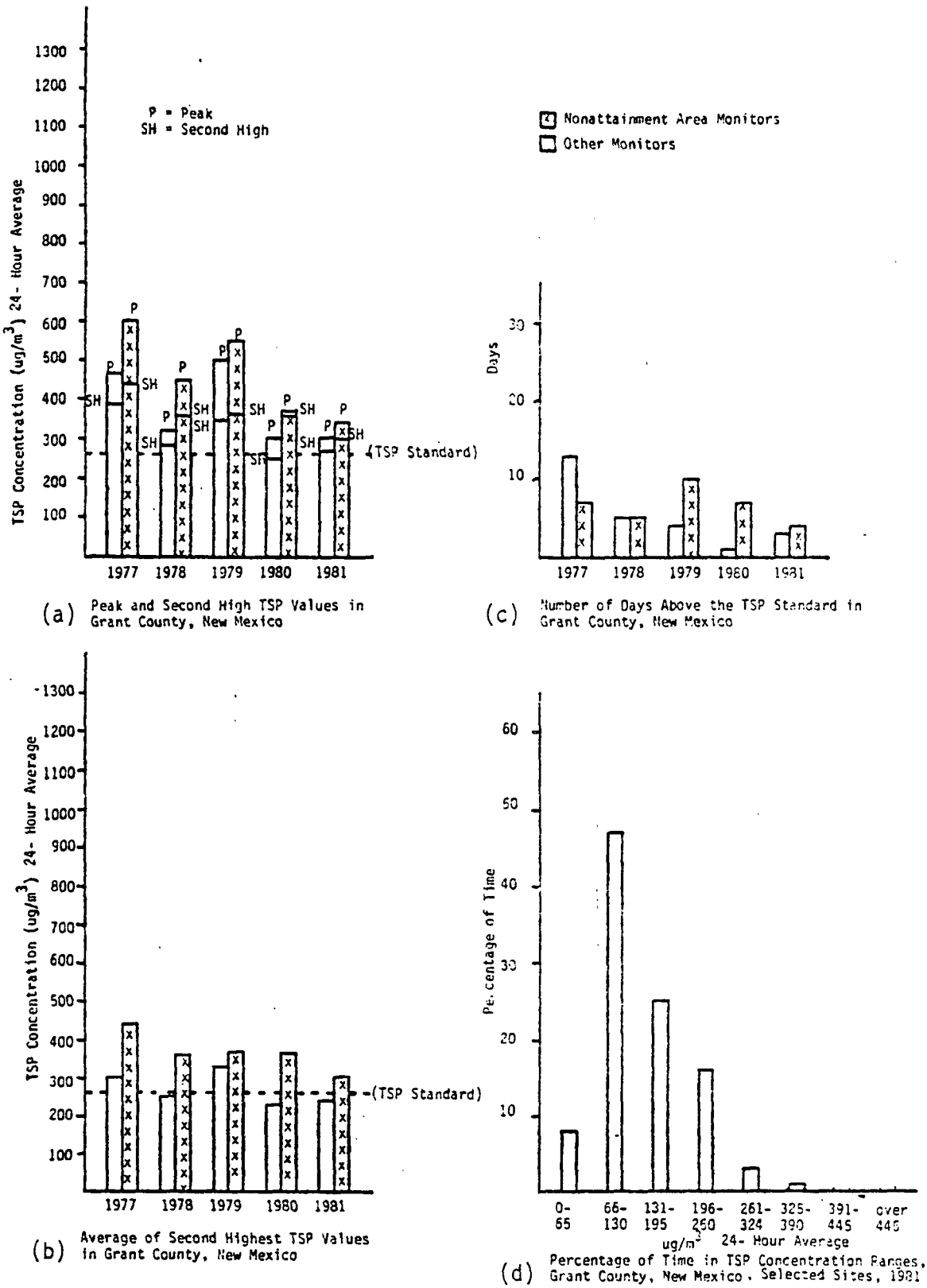


FIGURE 17 - TSP - Grant County, New Mexico

New Mexico Counties: The responsible agencies in New Mexico may need to perform further analysis and develop localized control strategies for the nonattainment areas in Bernalillo and Grant counties.

Regional Actions: The Regional office will continue working with Texas and New Mexico in developing additional control strategies to attain the TSP standard.

Requested Actions from Headquarters: EPA Headquarters needs to proceed expeditiously with promulgation of an IP standard which will provide some flexibility for regional variations in TSP problem identification and control requirements.

Lead Problem Areas:

Texas: The State of Texas has two problem areas for attainment of the lead standard, El Paso and Dallas. Both areas have stationary sources of lead. Monitoring programs are currently being conducted to determine the extent of the problem around each source.

The City of El Paso is monitoring lead emissions around one source, a primary lead and copper smelter, which is the major cause of the lead problem in the El Paso area. Source specific and fugitive emissions along with possibly mobile source emissions of lead contribute to the problem. Under a TACB consent order, particulate and SO_2 controls were installed in 1979 and 1980. Monitoring data (Figure 18) show many high values previous to 1980. However, some of those values were from improperly sited monitors, which were subsequently correctly sited in 1979. Monitoring data show a decrease in lead levels in the area in 1979, 1980 and 1982. It is not clear if this decrease is due to the controls or to a reduction in operating capacity, due to poor economic conditions. TACB is investigating bringing enforcement action against the smelter and requiring more controls. Lead emissions from the smelter are contributing to elevated lead levels in the adjacent areas of New Mexico.

The City of Dallas, in cooperation with TACB, is operating special purpose monitoring around the 2 secondary lead smelters in Dallas. There are only 3 quarters (April - December, 1982) of data available for lead levels at this time. More data will be available in the future as the study continues. Figure 18 summarizes the data that is available. The State of Texas will develop a control strategy if necessary for the Dallas area after the study of the problem area is completed. The State is presently investigating bringing enforcement action against one of the smelters.

Principal Barriers:

Principal barriers to reducing the extent of the lead problem in Region 6 focus on the need to complete the State's studies of lead emissions in El Paso and Dallas and then to determine what enforcement actions may be taken toward the source in El Paso and one smelter in Dallas. Current economic conditions may prohibit these sources from complying quickly with the State's requirements.

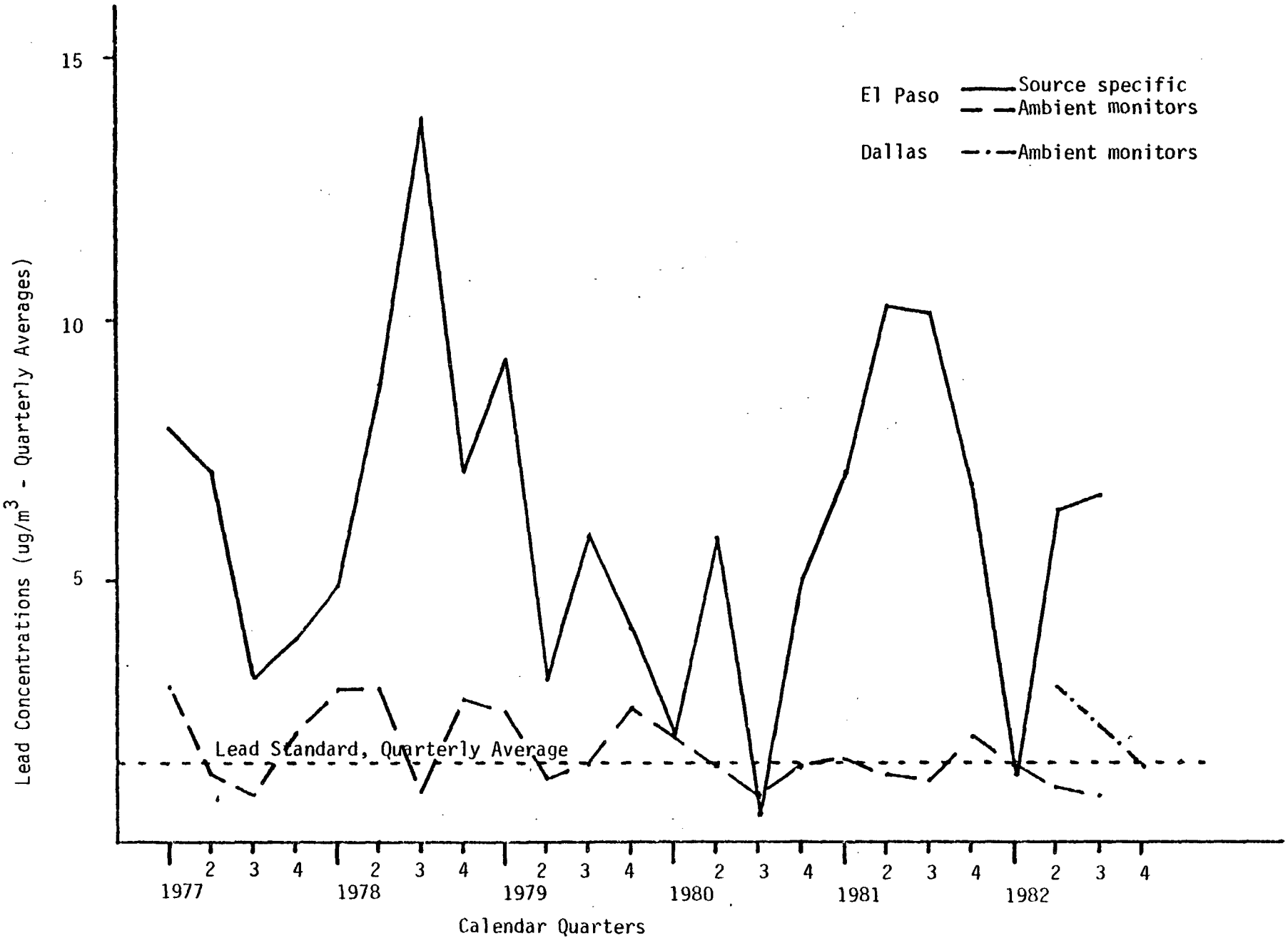


FIGURE 18 - Lead - Highest Quarterly Averages for Lead in El Paso and Dallas, Texas

Implications for Agency Management:

State Actions: Lead control strategies need to be developed for the lead sources in Dallas and El Paso, after completion of the State's studies.

Regional Actions: The Region will work with the appropriate agencies to continue the monitoring studies and to develop control strategies for each area.

Requested Action from Headquarters: Information is needed on cost effective methods to control fugitive lead emissions from smelters.

Air Toxics:

The States in Region 6 are concerned about the issue of toxic air contaminants. Texas and Louisiana have many sources of toxic chemicals. The State of Texas is currently setting up monitoring programs for two studies. One study is a comprehensive sampling program in Deer Park, Texas to investigate chemicals in the air which may be causing a suspected unusual increase in skin disorders in the area. This sampling program resulted from requests by citizens and analyses were conducted for various organic compounds, heavy metals, and elements. The other study is to define the problem of several selected toxic air contaminants in 4 counties along the upper Gulf Coast; Harris, Galveston, Jefferson and Orange.

The State of Louisiana has recently completed short-term special purpose monitoring in six areas using a mobile van. Permanent sites will be selected after preliminary data is analyzed.

The State of Oklahoma has also started to define air toxic problems in the State. Oklahoma is currently conducting studies for benzene and toluene in Tulsa and for cadmium in Bartlesville and Miami.

The State of New Mexico has initiated a monitoring program for air toxics. At the present time monitoring is being conducted in Anapra and Silver City for arsenic and cadmium. The State is also investigating other toxic elements such as HCl in Monument, New Mexico.

Arkansas' primary area of concern for air toxic activities is El Dorado. Two sites have been established for 2 priority sources in this area; a hazardous waste incinerator and a brominated compound manufacturing facility.

ATTACHMENT A: MEDIUM OVERVIEW

Ozone (O_3):

Ozone is the major air quality problem in Region 6. Figure 19 shows the areas exceeding the primary standard and alert levels for O_3 in 1981. This map shows counties exceeding the alert level in 1981 to include Harris, Jefferson and Brazoria counties. Other areas in the Region with several exceedances of the primary standard include the counties of Dallas, Tarrant, Orange and Denton in Texas; East Baton Rouge, Iberville, and St. John the Baptist Parishes in Louisiana; and Tulsa County in Oklahoma. Part II of this report discusses the Harris, Dallas, Tarrant, El Paso, East Baton Rouge and Tulsa areas. It also identifies those rural areas classified as not attaining the O_3 standard that have measured O_3 exceedances as significant problem areas. Rural O_3 areas are defined by EPA as areas containing fewer than 200,000 people in 1970. EPA believes the O_3 air quality in these counties is due primarily to the contributions from sources in industrialized urban areas. Any States with rural O_3 areas exceeding the O_3 standard after 1982 are required to demonstrate that these exceedances are caused by emissions transported from other areas.

Figure 20 shows the O_3 attainment status for Region 6 from 1978 to 1982. In 1978, 38 counties or parishes in Region 6 were designated as nonattainment since they contained areas in which primary violations occurred; in 1981 this number was reduced to 32. We believe that only 10 of these areas still exceed the O_3 standard, since we expect States to demonstrate that the remaining 22 nonattainment areas would attain the standard on the basis of monitoring data, modeling analysis or other data available to EPA.

Of the 631 major stationary sources which emit volatile organic compounds (VOC) in Region 6, 98 percent are currently in compliance with Federal and State air regulations. The major classification of stationary sources which emit VOC in Region 6 is the petroleum and petrochemical industries. Reduction in VOC emissions in Region 6 have been achieved through stationary source controls and the Federal Motor Vehicle Control Program.

The State of Texas has 11 counties containing nonattainment areas for ozone (O_3). The most severe problem is Houston (Harris County). Other Texas urban areas experiencing a significant problem include Dallas, Fort Worth, and El Paso.

The State of Louisiana has 19 parishes designated as nonattainment. Most of the parishes should be able to meet the December 31, 1982, attainment deadline. However, the parishes around Baton Rouge and New Orleans have continued to experience O_3 excursions during the O_3 season.

The State of Oklahoma has only one ozone nonattainment area, Tulsa County. Arkansas is requesting redesignation of the only ozone nonattainment area, Pulaski County, and the State of New Mexico is in attainment.

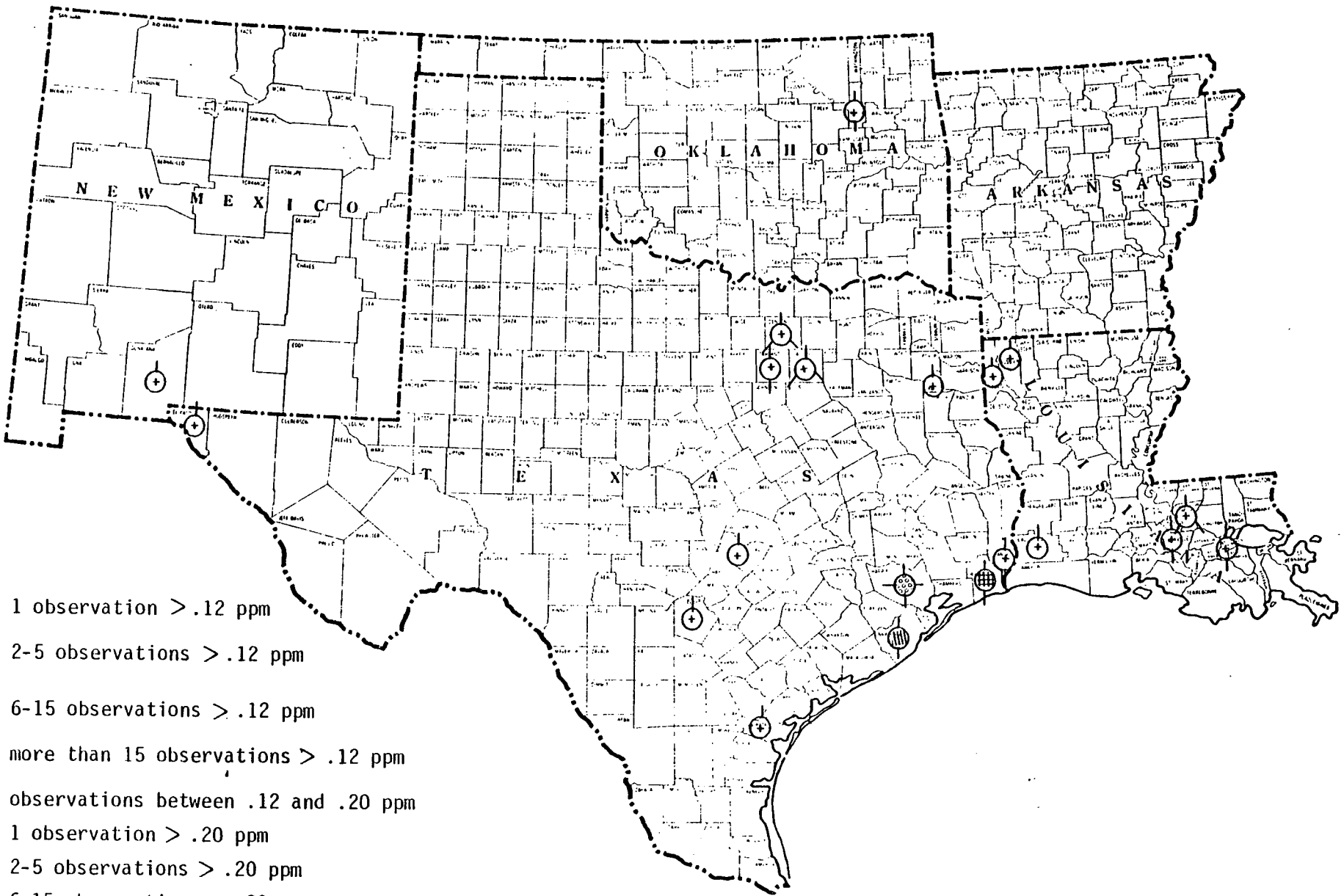


FIGURE 19- Exceedances of the primary standard and alert level for O_3 in Region 6, 1981

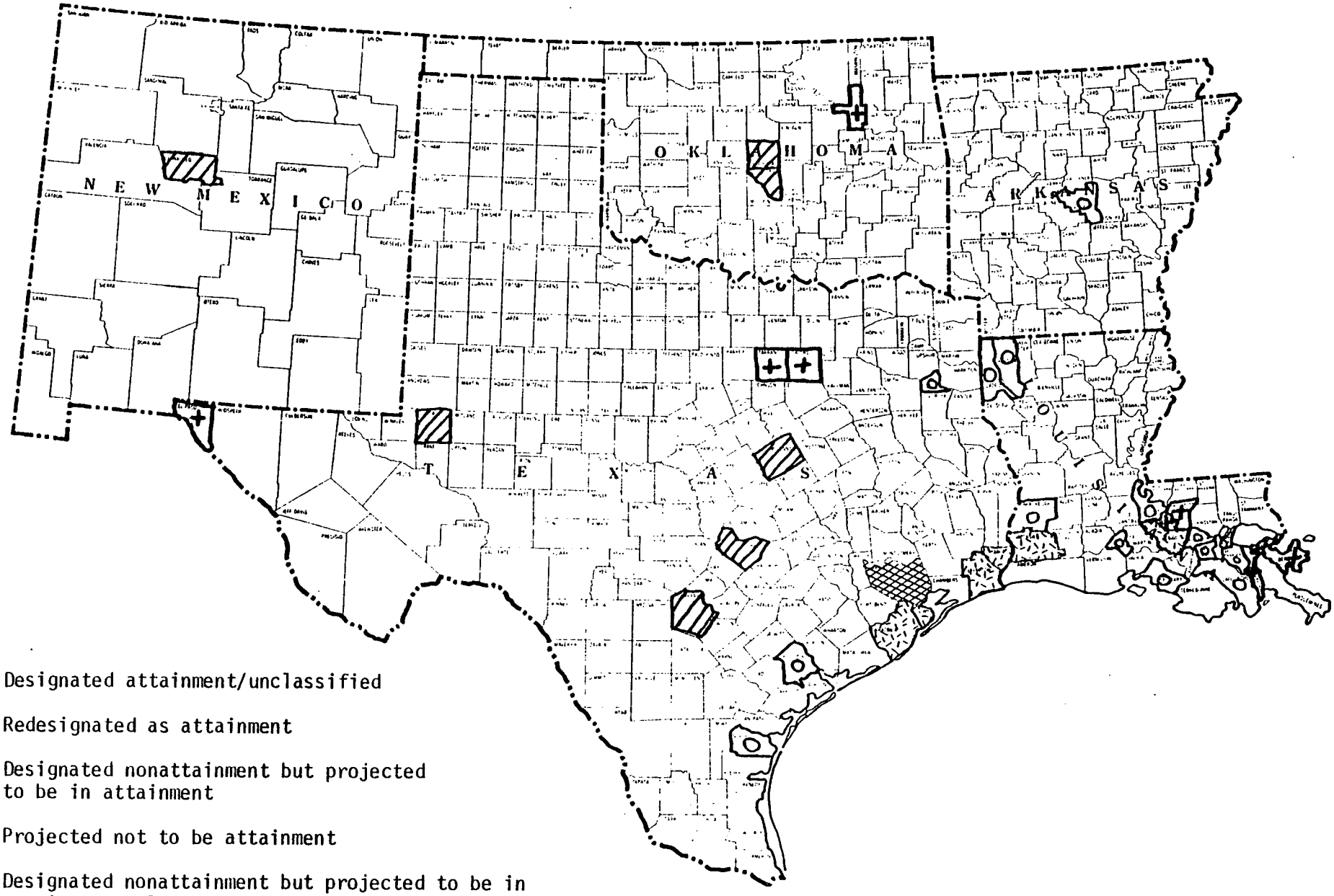


FIGURE 20 - Ozone Attainment Status in Region 6, 1978-1982

CARBON MONOXIDE (CO):

There has been some improvement in CO levels in Region 6 over the past few years. Figure 21 is a map of areas exceeding the primary standard and alert levels for CO. This map shows that the major problem areas are Albuquerque, New Mexico; El Paso, Texas; and Tulsa, Oklahoma. Other areas depicted on the map have only one exceedance of the standard in 1981 which is allowed.

Figure 22 shows the CO attainment status in the Region from 1978 to 1982. In 1978, six counties in Region 6 States were designated as nonattainment for CO since they violated the standard; in 1981, this number had been reduced to four counties: Bernalillo (Albuquerque) and Dona Ana Counties, New Mexico; El Paso, Texas and Tulsa, Oklahoma. Bernalillo County has been granted an extension until 1987 to attain the CO standard. EPA believes Dona Ana and Tulsa should be able to demonstrate attainment soon. El Paso is still exceeding the standard and was discussed in Part II as a problem area.

TOTAL SUSPENDED PARTICULATE (TSP):

Progress has been made in Region 6 in reducing TSP levels. Figure 23 shows those areas exceeding the primary standard and the alert levels for TSP. This map shows that El Paso County, Texas is the area with the most exceedances in the Region. Harris County, Texas and Dona Ana County, New Mexico also had numerous exceedances of the TSP 24-hour standard, however, the alert level (375 ug/m^3, 24-hour average) was only exceeded one time in each county. Eight counties have exceeded the 24-hour TSP standard two to five times in 1981; six of these exceeded the alert level once. Nineteen counties exceeded the 24-hour standard once; seven of these were over the alert level, however, one exceedance per year is allowed so none of these are violations.

Figure 24 shows the TSP attainment status of Region 6 from 1978 to 1982. In 1978, eighteen counties in Region 6 States were designated as nonattainment since they contained areas in which primary violations occurred; in 1981, the number of counties had been reduced to 11. EPA believes that only 6 of these areas still exceed the standard as discussed in Part II.

TSP problems in Region 6 are believed to be primarily due to wind blown dust, unpaved roads, agricultural sources and fugitive dust from several sources in one State. The reduction in TSP has been achieved through the control of fugitive emissions from stationary sources, and paving of roads and parking lots. Of the 1966 major industrial sources of TSP in Region 6, 98.4 percent are in compliance with Federal and State air regulations.

SULFUR DIOXIDE (SO_2):

Figure 25 shows the SO_2 attainment status of Region 6 from 1978 to 1982. Only 2 counties in one state in Region 6 contain primary SO_2 nonattainment areas in 1981: San Juan and Grant. The problems were due to coal-fired power plants and a copper smelter. New Mexico has requested redesignation of

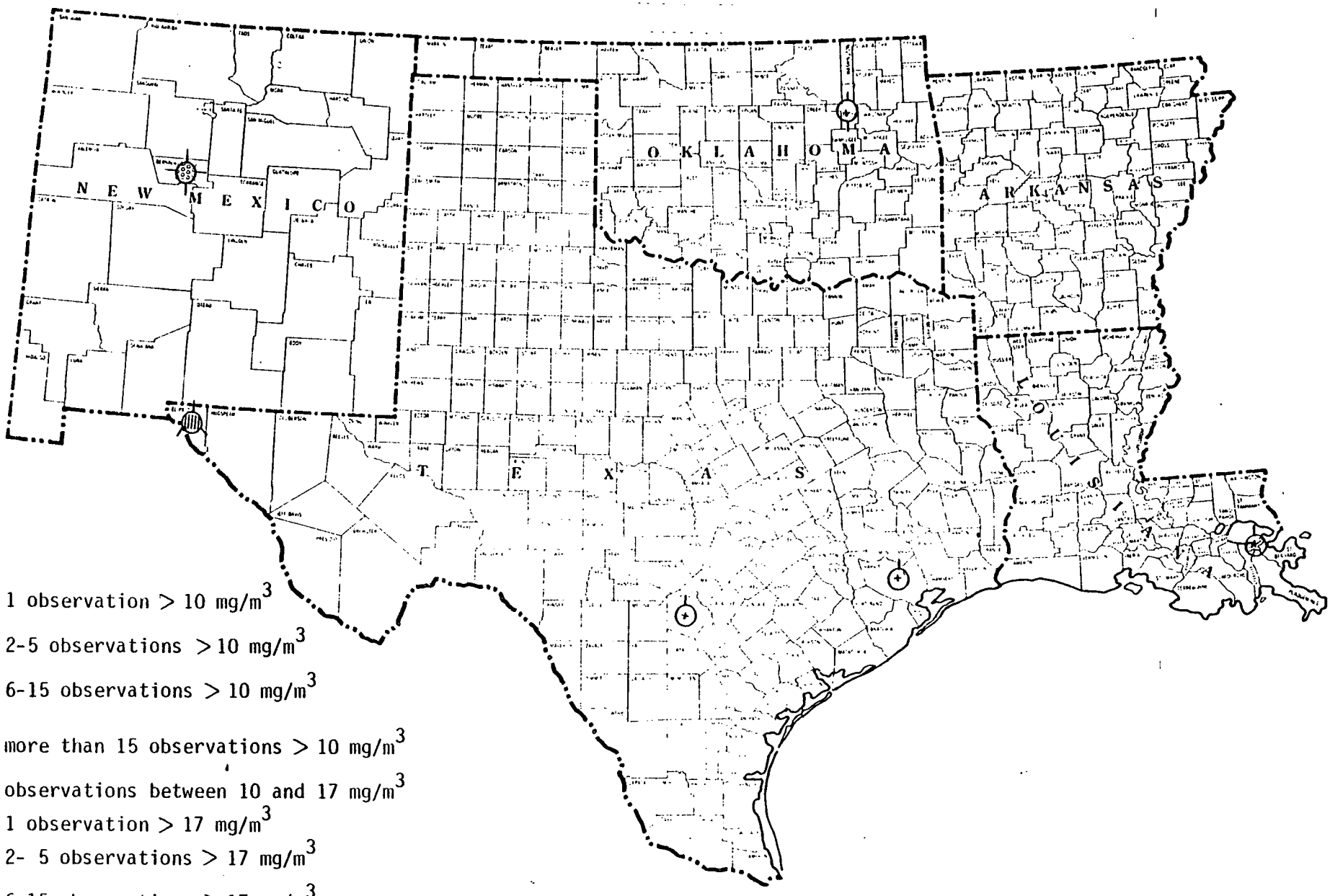


FIGURE 21 - Exceedances of the primary standard and alert level for CO in Region 6, 1981

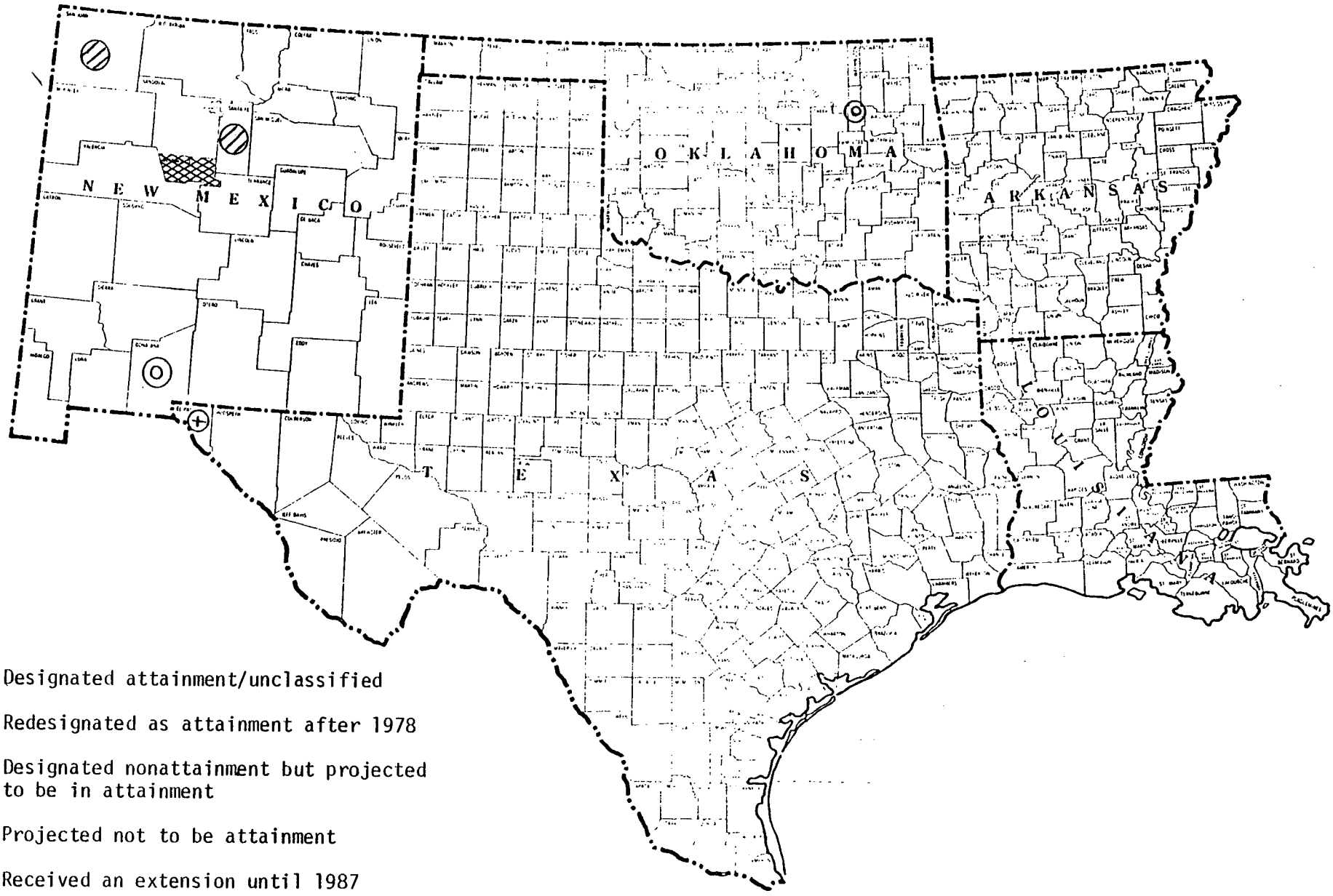


FIGURE 22 - CO Attainment Status in Region 6, 1978-1982

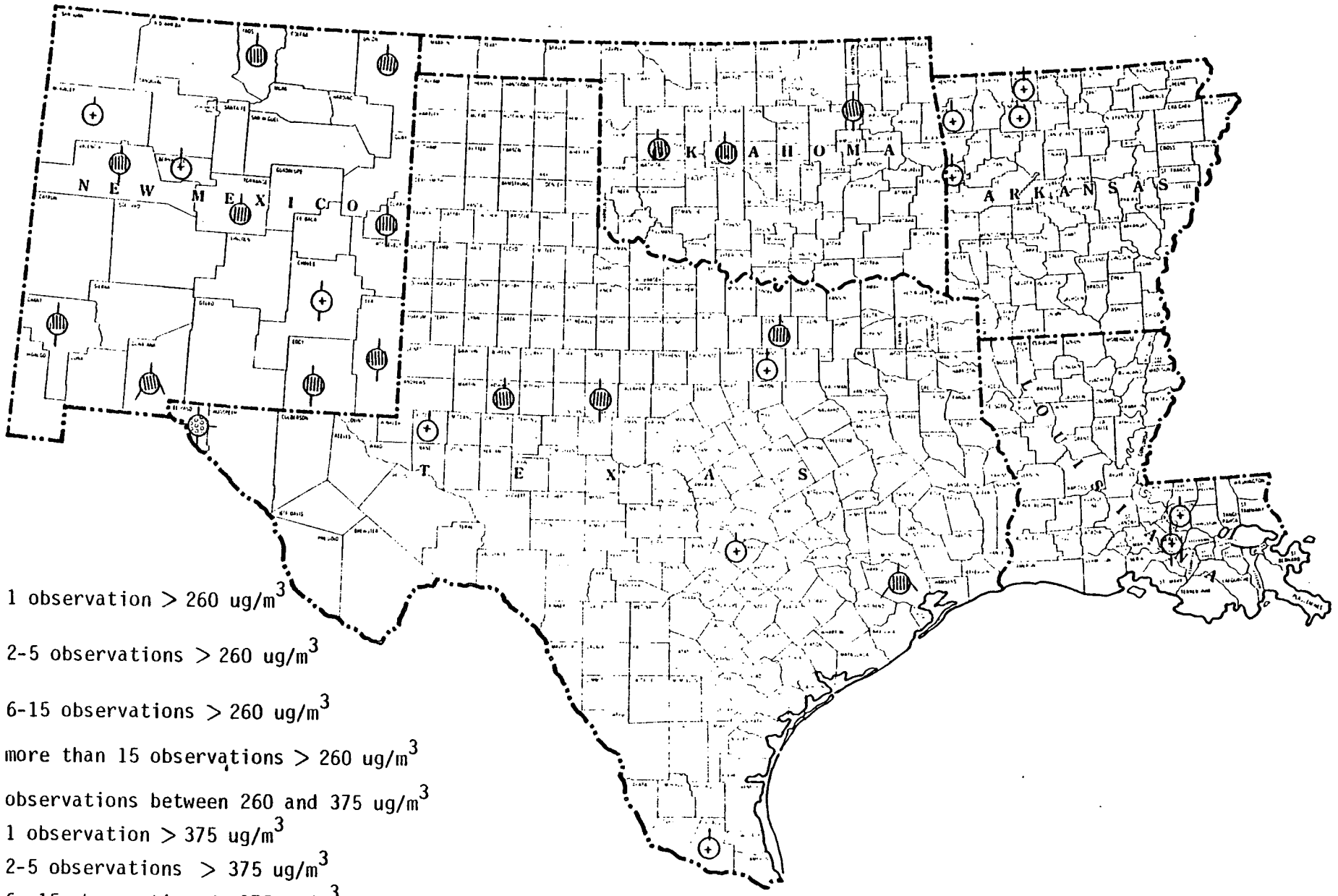


FIGURE 23 - Exceedances of the primary standard and alert level for TSP in Region 6, 1981

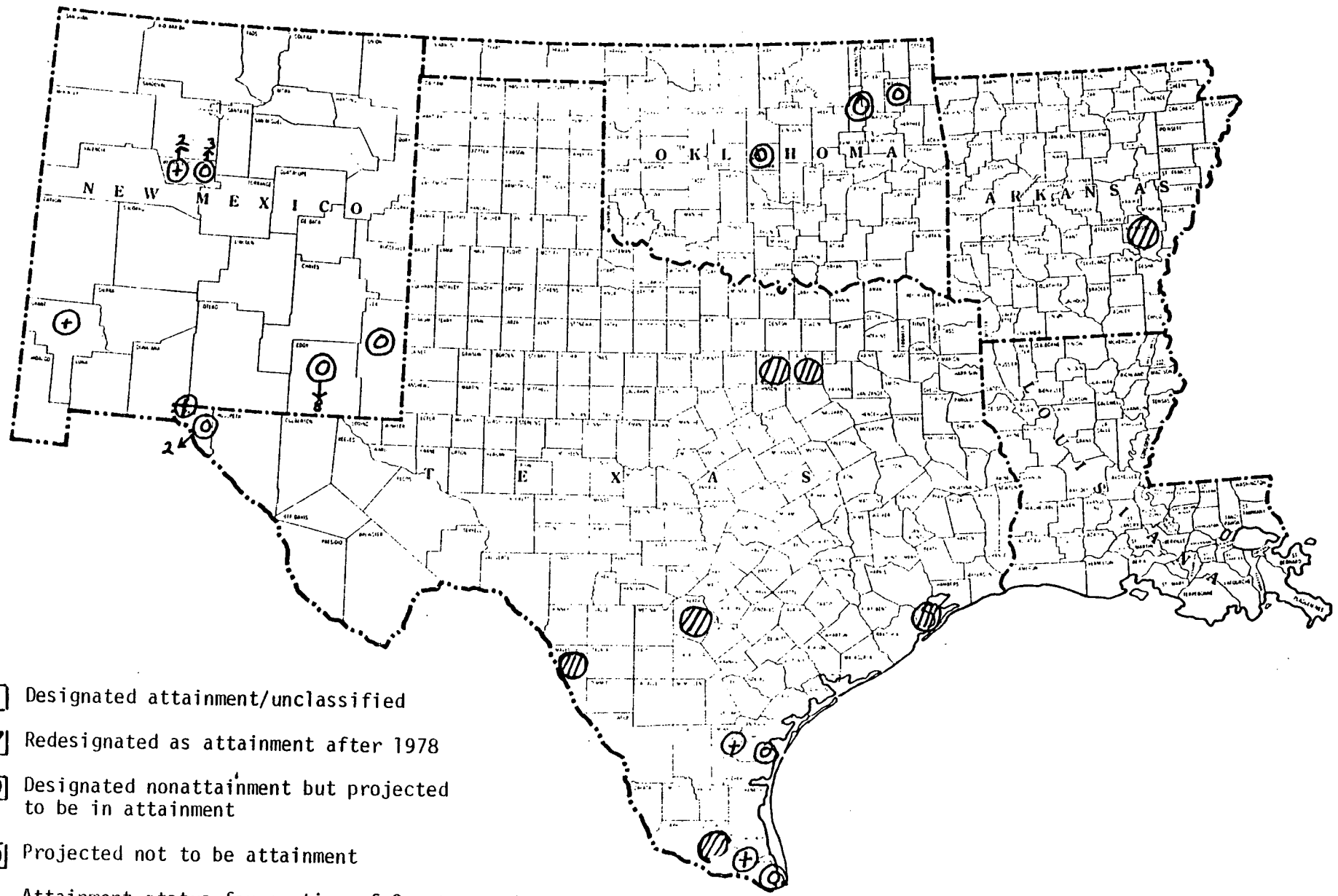


FIGURE 24 - TSP Attainment Status in Region 6, 1978-1982

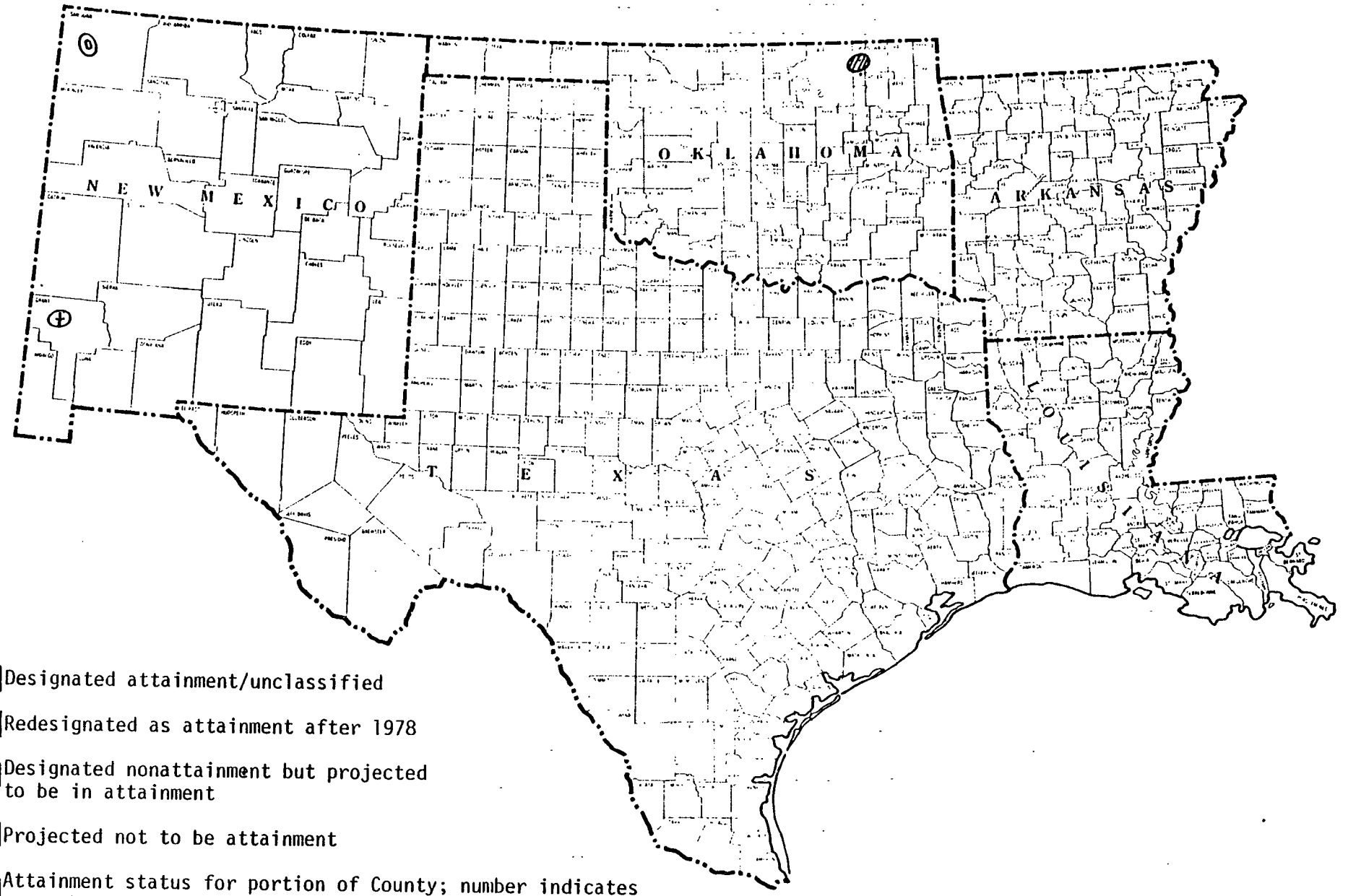


FIGURE 25 - SO_2 Attainment Status in Region 6, 1978-1982

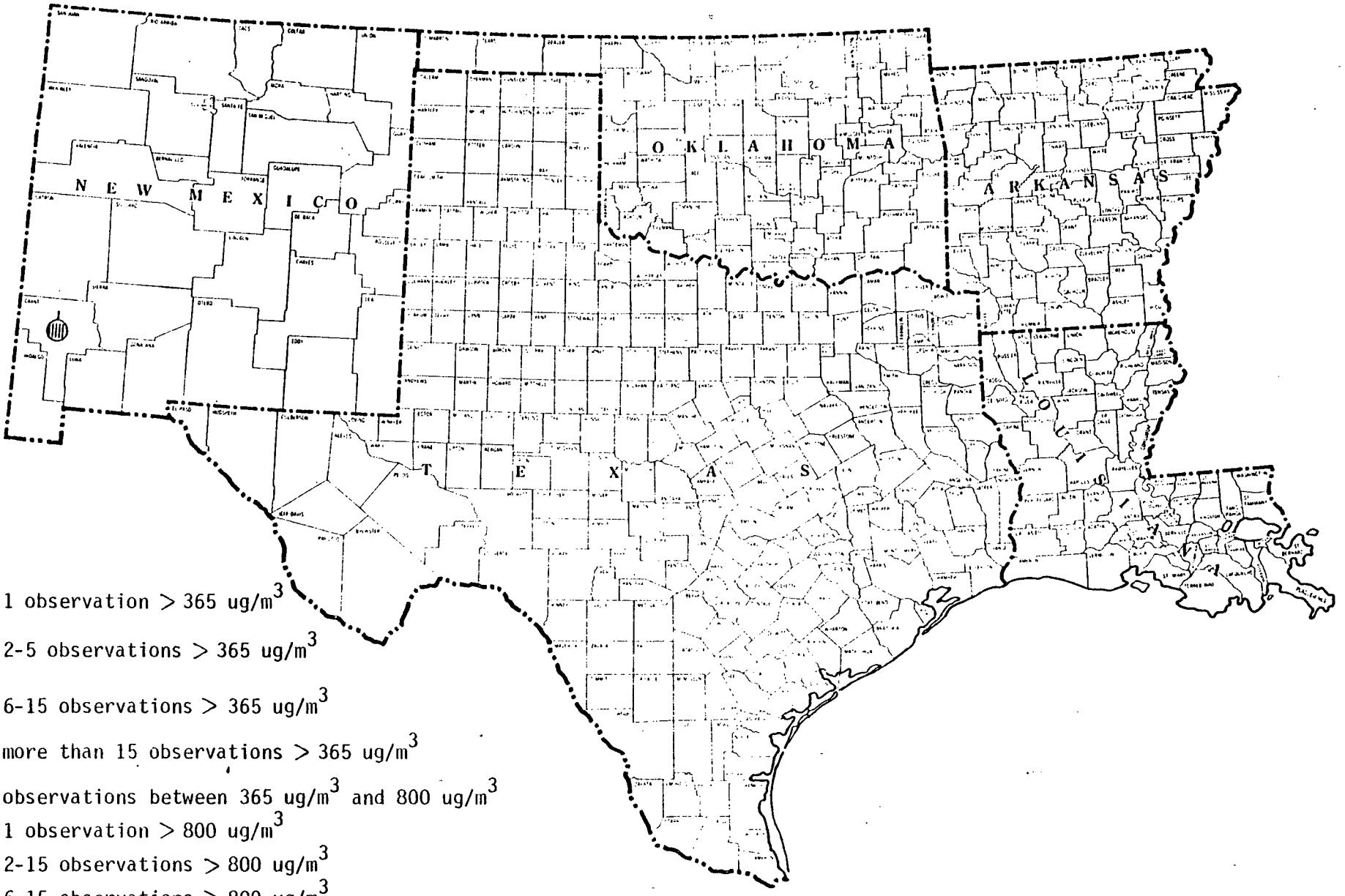


FIGURE 26 - Exceedances of the primary standard and alert level for SO_2 in Region 6, 1981

the SO_2 nonattainment area surrounding the coal-fired power plants in San Juan. The supplementary control system being used at the copper smelter should keep the ambient levels of SO_2 below the standard.

NITROGEN DIOXIDE (NO_2):

No areas exceeded the NO_2 standard in 1981, although one urban area exceeded the alert level (282 ug/m^3, 24 hour average), Figure 27. An exceedance of the alert level does not constitute a violation of any standard. This measure is only to alert authorities and the public that if the trend continues public health could be impacted and measures should be taken to prevent this occurrence. In 1978, there were no areas in Region 6 designated as nonattainment for NO_2. There are also no NO_2 nonattainment areas currently in the Region.

LEAD (Pb):

Currently there are only 2 areas in the region with known lead pollution problems, Dallas, Texas and an area around El Paso, Texas in Texas and New Mexico. Oklahoma is to start monitoring lead in Bartlesville as there is a potential source of high lead levels in that area. Louisiana has established a lead monitoring network and should start analyzing data soon. Arkansas does not anticipate any lead problems as they do not have any point sources of lead; however, Arkansas is committed to establish 2 SLAMS for lead.

AIR TOXICS:

The states of Region 6 are currently starting monitoring programs around potential sources of air toxics. Part II discusses more fully each state's program.

ACID RAIN:

Acid rain is not a problem of immediate concern throughout most of Texas; however, there are two areas in Texas that appear susceptible to potential acid rain deposition impacts. These are the northeast and southeast portion of Texas. The northeast corner of Texas appears to be the area in Texas most likely to be susceptible to potential impact. Vegetation in this region, particularly that found in sandy pinelands and boggy wet lands, is potentially sensitive to acid deposition. Soils in this region are also potentially sensitive, due to their naturally acidic nature.

The southeast portion of Texas also appears to be susceptible to some of the acid deposition impacts. This area is of major importance in the overall acid deposition issue due to the high density of air pollution emission sources and levels of precipitation acidity found there.

The region west of a line drawn approximately from Corpus Christi through Dallas - Fort Worth to the Red River appears to be relatively immune to impacts of acid deposition. Soils in this area have a sufficient natural alkaline buffering capacity to neutralize acid depositions which may occur.

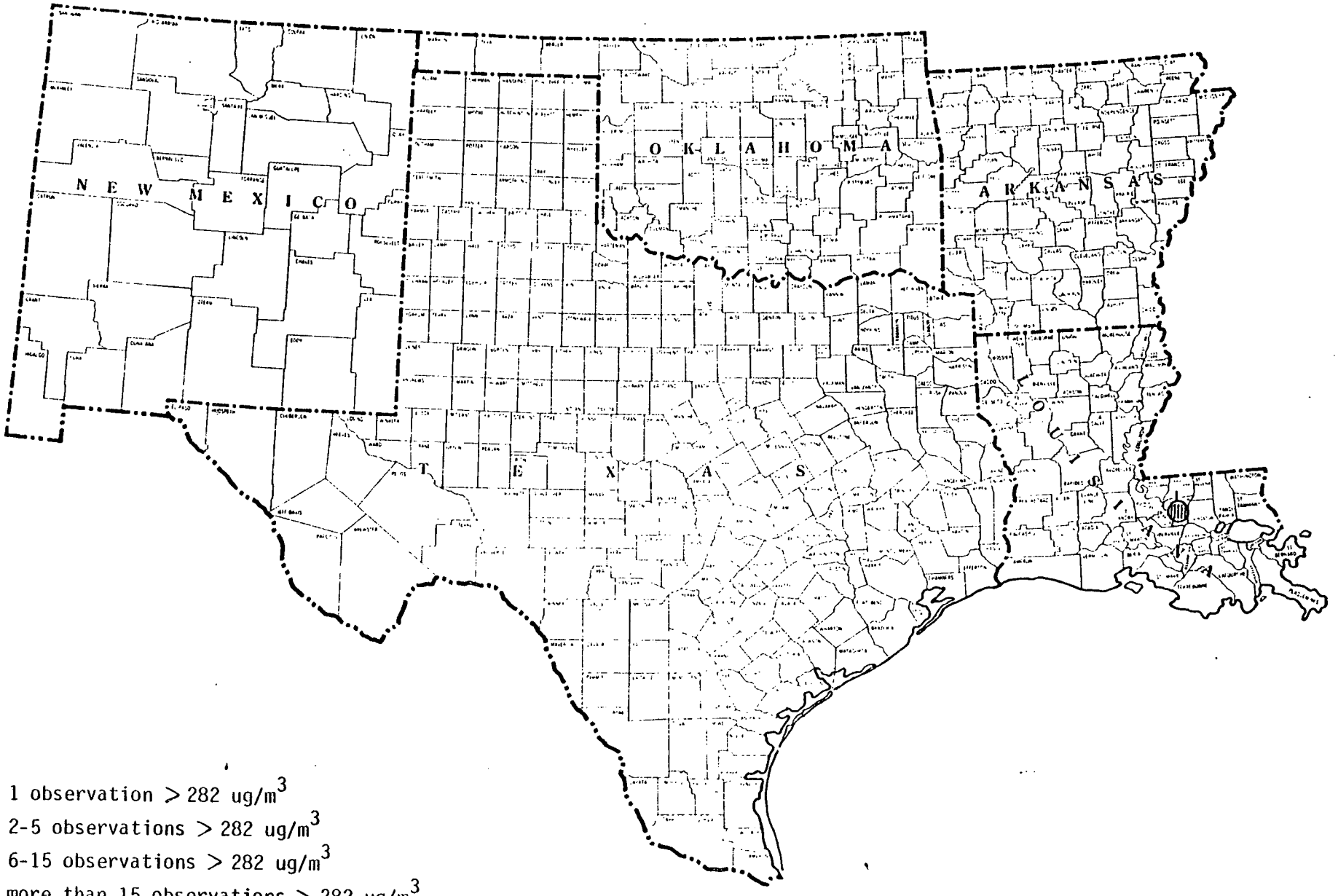


FIGURE 27 - Observations greater than the alert level for NO_2 in Region 6, 1981

Dry deposition is probably at least as important as wet deposition in Texas. This is due in part to the large portion of nitrogen oxide (NO_x) emissions in the State. NO_x is converted to nitric acid (HNO_3), which is removed primarily by dry deposition mechanisms. The climatology of Texas, with less frequent precipitation events, more sunshine, and higher temperatures than most of the northeastern U.S., also enhances the relative contribution of dry deposition.

The Texas Air Control Board (TACB) currently operates event monitors at regional offices located in Tyler, Beaumont, and Fort Worth. Sample pH and conductivity are measured at both the regional and central laboratories. Sample analyses of specific cations and anions are performed at the TACB central laboratory. For 1982 at the Tyler site, pH values measured ranged from 3.7 to 5.3 with a pH arithmetic mean of 4.3. The TACB also operates one National Atmospheric Deposition Program (NADP) monitor at Longview. Data collection began in June, 1982.

New Mexico is planning to operate 2 acid rain monitors. One site may be located at Chaco Canyon National Monument where it is suspected that acid rain may be accelerating weathering of the unique archaeological sites. The other may be located in the Santa Fe National Forest as private studies in the past have recorded pH values as low as 4.0 in this area. Acid rain may be also impacting New Mexico at higher elevations where there less potential for neutralization.

Arkansas currently has a specialized sequential sampler located in Little Rock that analyzes rain fractions for pH during each rainfall event. The State uses lab analysis to determine sulfate, nitrate and metals content of samples. The pH values observed at the site range from 4 to 6.

Oklahoma will install two acid rain monitors in late 1983. They will probably be located in the southeastern portion of the State, which may be the most susceptible area to potential impact.

Louisiana has initiated a preliminary program monitoring rainfall pH at two sites in the Baton Rouge area. Data collection began in August, 1982. The pH values as low as 3.4 have been observed at one site. Louisiana will step up acid rain monitoring in 1983.

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WATER QUALITY

TEXAS

PART I - OVERVIEW AND ENVIRONMENTAL STATUS AND TRENDS

INTRODUCTION - ARKANSAS

The Arkansas Department of Pollution Control and Ecology (ADPC&E) is authorized to act as the "State Water Pollution Control Agency" for the State of Arkansas. One of their many functions is to maintain the ambient surface water monitoring program. There are 103 ambient river and stream monitoring stations, 24 fish, shellfish, and sediment stations, and 42 biological monitoring stations.

There are six major river basins in Arkansas (the White, Arkansas, St. Francis, Ouachita, Red and Mississippi) which are further divided into thirty-nine water quality planning segments based on hydrological characteristics, man's activities, etc. The streams within each segment are classified as effluent limited or water quality limited on the basis of present and projected water quality problems. Based on 1974 data, there are approximately 309 water quality limited streams and 214 effluent limited streams.

Of the 6,239 miles of major Arkansas streams, it is estimated by the State that 4,087 miles, or 77 percent, will meet fishable/swimmable standards. The remaining 23 percent of stream miles fall short of fishable/swimmable goals due to physical manipulation of the stream through dredging, stream channelization, land clearing for agriculture, and the resulting nonpoint source pollution as well as municipal industrial point source discharges. In these streams, mean fecal coliform levels frequently exceed the criteria for swimming. Turbidity levels are also exceeding levels suitable for recreation. Many Arkansas streams experience atypical dilution ratios and low reaeration rates due to low streambed slopes.

ADPC&E is presently involved in two water pollution control permit programs: the State program and the National Pollutant Discharge Elimination System (NPDES) permit program administered by EPA.

In 1980, the statewide population was 2,285,513. In the year 2000, the population is expected to increase approximately 33% and reach 3,032,046.

WATER QUALITY

Despite a steady growth in the State's population and in industrial and agricultural production, the overall water quality has remained fairly high. Throughout the State, water quality varies widely, depending on local economic activities and natural conditions. The highly agriculturalized Delta region is heavily influenced by nonpoint source agricultural runoff, i.e., turbidity, suspended solids, and nutrients. The west central region is showing some degrading trends concerning dissolved oxygen, nutrients, and total dissolved solids. The southwest region continues to exhibit signs of the petroleum production which occurred primarily in the past.

In addition, the lowland stream characteristics are evident in water quality conditions specifically, dissolved oxygen, nutrients, suspended solids, turbidity, and pH. The extreme northwest region is experiencing a decline in water quality due to increasing population and increased usage of animal waste for land application. The north central region is showing current land use changes, where hardwood forests are being converted to pasturelands. These changes are affecting the silts and suspended sediments being measured in surface waters.

Progress has been made toward eliminating pesticides from the environment. Table A presents results of monitoring activities. The number of water samples containing concentrations exceeding recommended criteria by year are reported.

Table A: Toxic Water Quality Problems in Arkansas

YEAR	74/75	76/77	78/79	80/81
DDT	42	31	11	0
Dieldrin	41	50	10	0
Endrin	33	29	17	0
Lindane	No Data	2	No Data	0
Toxaphene	67	41	20	2
Methyl Parathion	No Data	19	No Data	3

Remnants of past usage of the more persistent pesticides are still being observed in the food chain organisms and some sediment samples. For the most part it appears that the fish tissue sampling results are lagging behind the surface water sampling explained above and following the same general trend.

Currently, there are also several regions in the State where point source pollution control programs are inadequate. For example, there are approximately 349 towns without sewer systems. There are also many municipal facilities that are inadequate or overloaded.

Figures 1, 2, and 3 present information relating to violations of Water Quality Standards for dissolved oxygen, pH and coliform at stream monitoring stations throughout Arkansas. These figures were developed using the monitoring data in STORET for the years 1978-1981. The stations were selected using the following criteria:

- The station must have had at least 30 observations for dissolved oxygen and pH, and at least 15 observations for coliform.

- The station must have had at least 45 months of coverage.

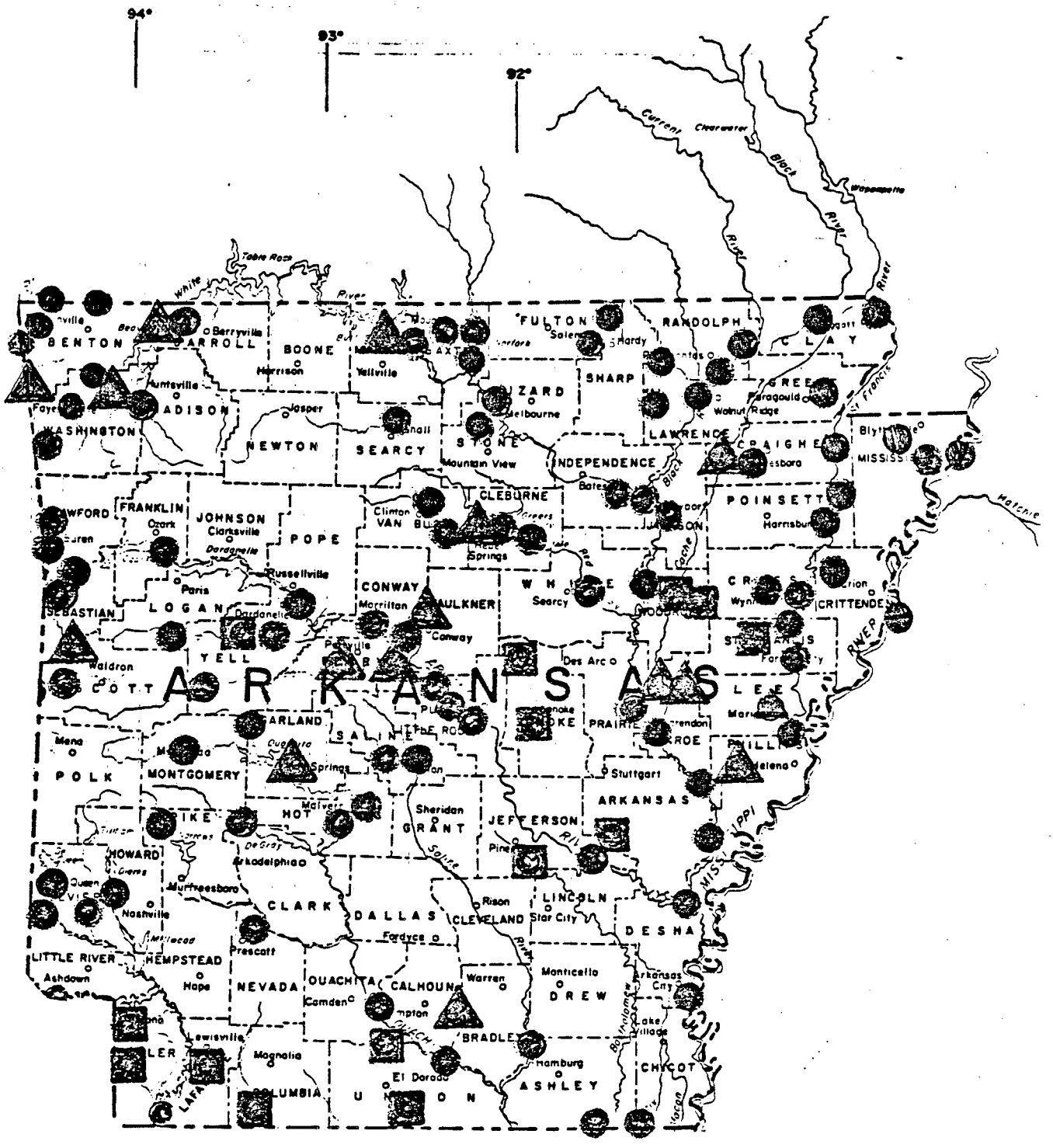


Figure 1

Dissolved Oxygen % Exceedence

● 0-9%

▲ 10-24%

■ ≥ 25%

(≥30 samples between 1978-1981)

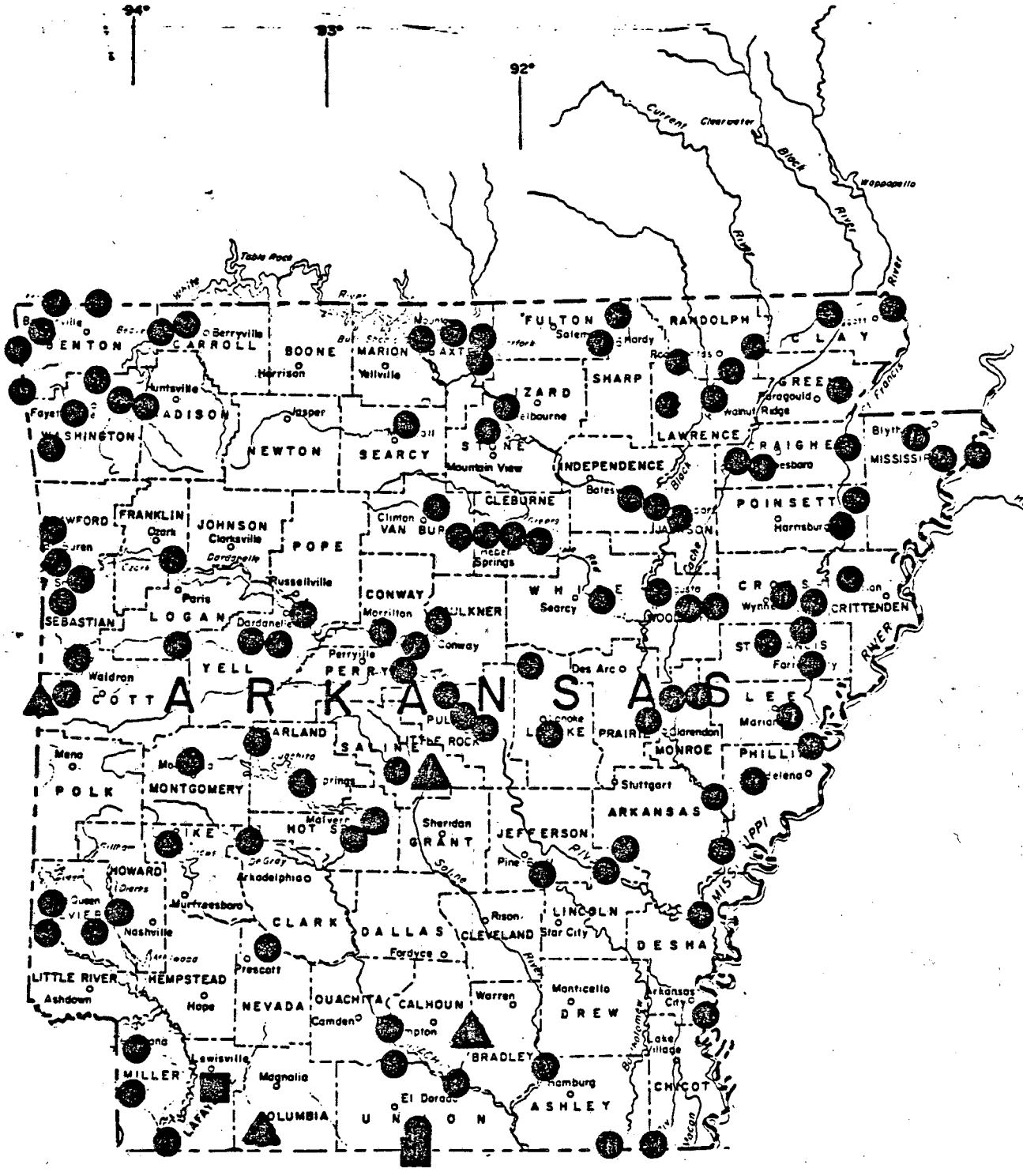


Figure 2

pH % Exceedence

● 0-9%

▲ 10-24%

■ ≥ 25%

(≥30 samples between 1978-1981)

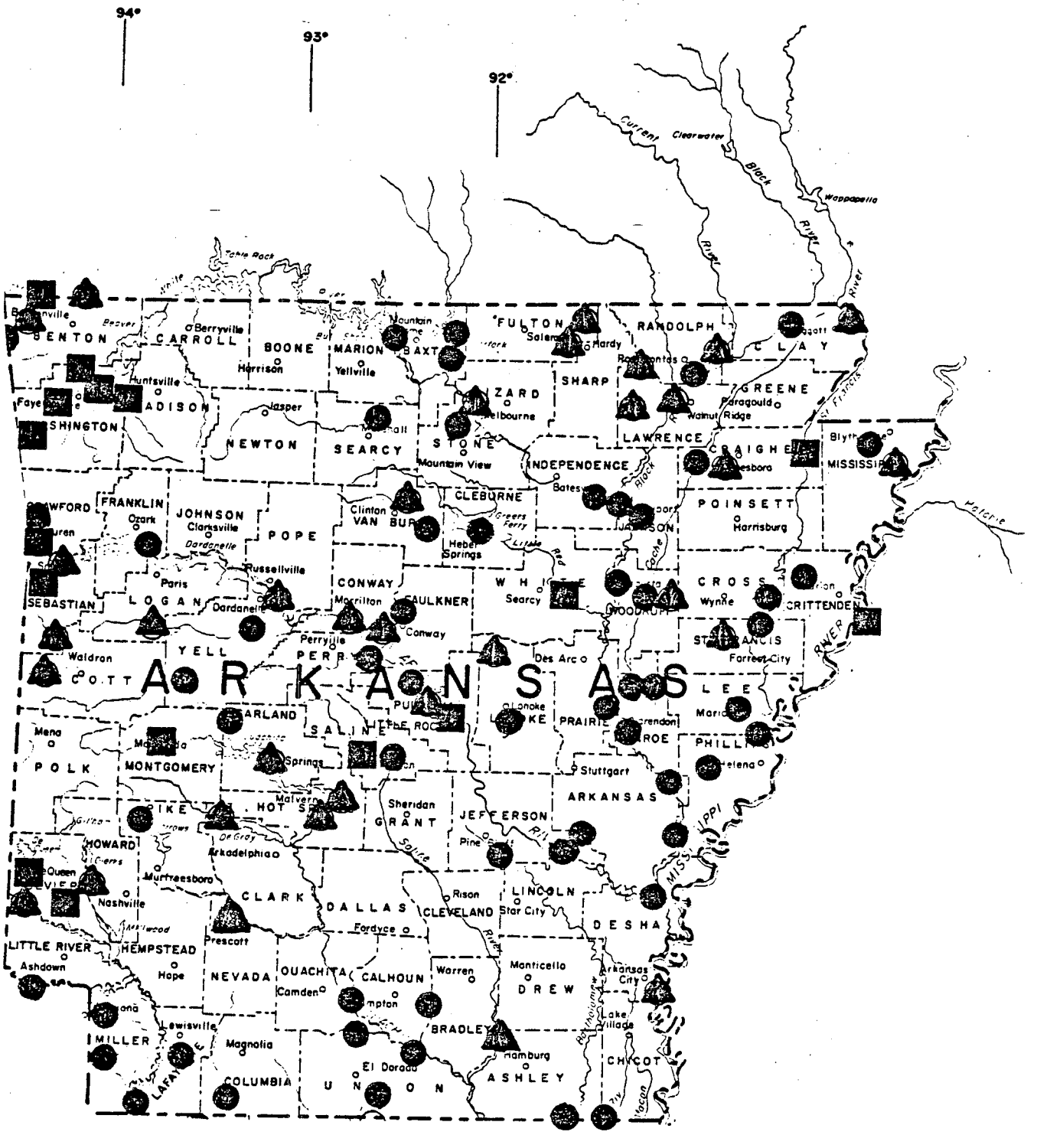


Figure 3

Coliform % Exceedence

● 0-9%

▲ 10-24%

■ ≥ 25%

(≥ 15 samples between 1978-1981)

Figure 4 illustrates the water quality status and trends for several parameters for the sixteen hydrologic basins. Despite industrial and population growth in Arkansas, the water quality in the State remains fairly stable.

PART II SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS

SIGNIFICANT PROBLEMS

The sixteen hydrologic basins vary in population density and growth rate, water quality, point sources of pollution, and nonpoint sources of pollution. The major point sources of pollution are municipalities and industry. The major nonpoint sources of pollution are failing septic tanks, agricultural runoff, animal waste land application and runoff, construction runoff, oil and brine disposal, and silvicultural runoff.

Water Quality monitoring over the past decade has indicated a potential problem with pesticides found in streams, particularly in the eastern or delta portion of the state. However, more recently the trend in pesticide levels in this area has been decreasing.

In 1979-1980, one particular stream, Bayou Meto, was found to have relatively low levels of dioxin in sediment and fish tissue and was subsequently quarantined by the State. More recent testing has indicated that dioxin levels in sediment and fish tissue samples from Bayou Meto have decreased. The miles of stream reach affected by dioxin have also decreased.

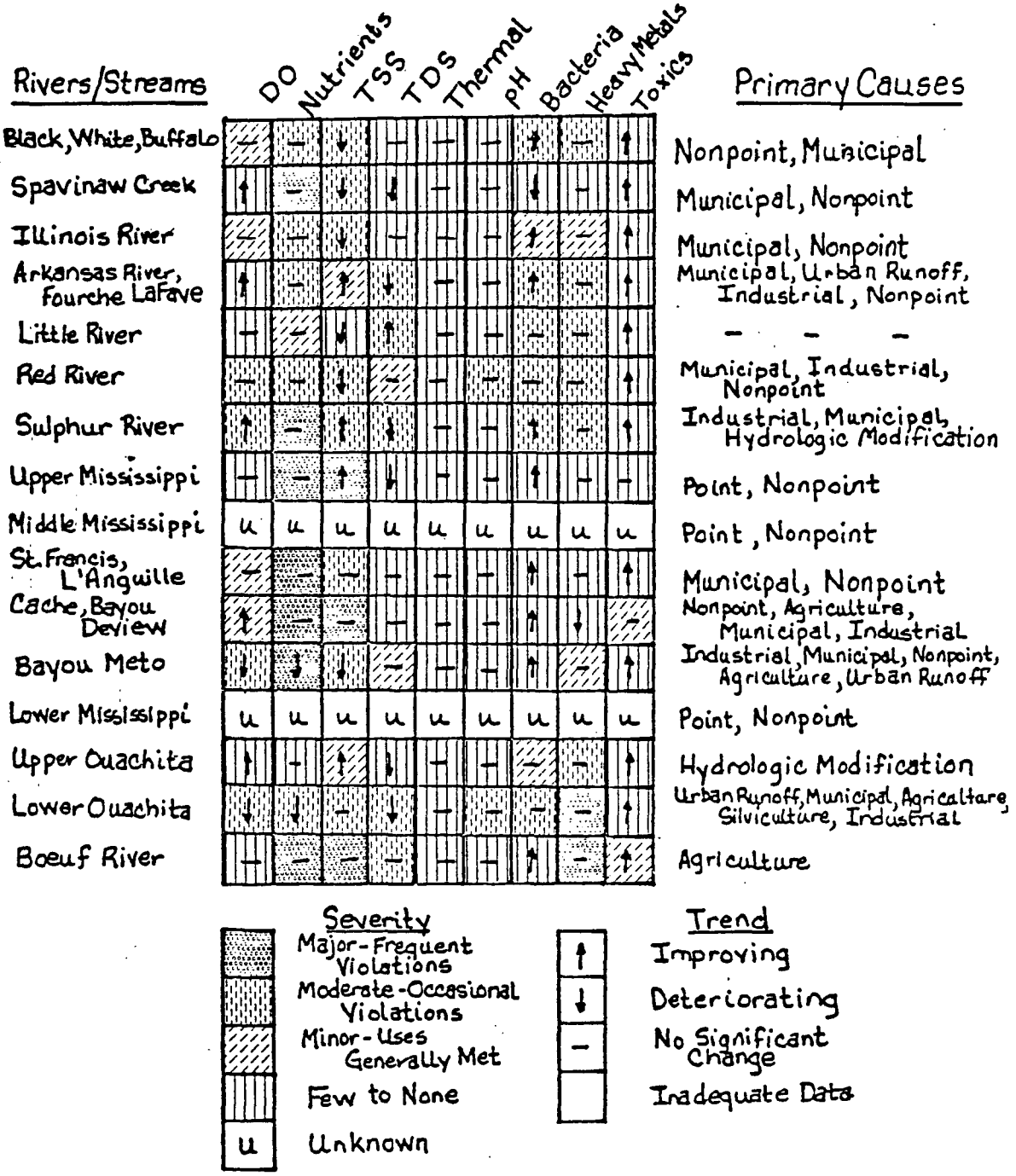
PRINCIPAL BARRIERS

At present, one of the greatest problems facing the voluntary nonpoint source pollution control program is an economic one. Land owners and land users have no incentive to implement best management practices (BMPs) that will not help increase production immediately. Poor economic conditions also tend to accelerate the consolidation of small farms and concentration of land ownership.

With the increased population growth, there are increasing demands on municipal wastewater treatment plants, with the result, in some cases, of exceeding their design capacity. This can result in either inefficient or inadequate treatment of the wastewater, or spills of raw sewage into watercourses. Another problem of increased population growth and development is increased eutrophication in water supply lakes. One example is Beaver Reservoir. It has been degraded by both point and nonpoint sources from the surrounding area.

Because of resource constraints, the State will have difficulties in evaluating the attainment of Water Quality Standards and the protection of designated uses for all Arkansas streams.

Figure 4 - Water Quality Status and Trends - Arkansas



IMPLICATIONS FOR AGENCY MANAGEMENT

WATER QUALITY

ADPC&E is currently using Section 205(j) funds to reclassify Arkansas streams. Site specific standards for selected waters to protect existing and attainable uses will be developed. The State Water Quality Standards will be revised when this data becomes available.

EPA has funded the State through Section 208 to study the cause and effect and the management of several nonpoint source pollution problems. These studies include best management practices for septic tanks, forestry, agriculture, animal waste, and construction runoff.

CONSTRUCTION GRANTS

Arkansas has modified its construction grant priority rating system to meet the requirements of P.L. 97-117. The priority system ranking formula includes a segment index which is determined by the percent of stream measurements which violate Water Quality Standards.

Due to the high population growth rate for the city of Fayetteville and the surrounding communities, EPA has provided funding for the facilities planning for new treatment facilities for the city of Fayetteville (White River) and the construction of several treatment plants for the surrounding smaller communities.

The high level of coliform and low dissolved oxygen level in the Arkansas River in the Little Rock area appear to be caused by urban runoff and an overloaded wastewater treatment facility. To alleviate this problem EPA has provided the funding for the construction of a new treatment facility which is nearly complete. Completion of the new facilities should result in a decrease in the coliform level and an increase the dissolved oxygen level in the Arkansas River.

Wastewater operator training has been completely restructured. This should result in better operated and maintained wastewater treatment facilities and reduced Water Quality Standards violations.

Since 1956 over 642 construction grants totaling over $266,586,796 in Federal funds have been awarded in the state of Arkansas. This includes 294 grants awarded under P.L. 84-660 and 348 grants awarded under P.L. 92-500. A further breakdown is as follows:

	Number of Grants	Amount Awarded
P.L. 84-660	294	$ 62,148,070
P.L. 92-500		
- Step 0 Delegation	3	$ 3,574,100
- Step 1 Planning	172	$ 6,646,734
- Step 2 Design	81	$ 9,666,421
- Step 3 Construction	52	$140,306,529
- Step 4 (2+3)	37	$ 43,368,168
- Step 5 Advance of Allowance	1	$ 199,321
- Step 6 WQM Planning	1	$ 177,453
- Step 9 State Training Center	1	$ 500,000
P.L. 92-500 Total	348	$204,438,726

To date the P.L. 84-660 projects have resulted in the construction of many treatment works including 237 treatment plants. Many of the P.L. 92-500 projects are still under way. As of October 1, 1982, the Step 3 and 2+3 grants have resulted in the completion of 49 treatment plants as well as other treatment works such as major interceptors, sludge handling facilities and lift stations.

NPDES PERMITS

EPA is presently working with the State to reissue municipal and industrial NPDES permits. Additionally, the State is completing the requirements to undertake NPDES delegation. A tabulation of NPDES permits issued in Region II and Arkansas is included in Table D.

PART I - OVERVIEW OF ENVIRONMENTAL STATUS AND TRENDS

INTRODUCTION - LOUISIANA

The responsibility for maintaining the water quality in Louisiana lies with the Water Pollution Control Division (WPCD) of the Louisiana Department of Natural Resources (LDNR). WPCD is responsible for maintaining 119 ambient water quality monitoring stations and 72 pesticide sampling stations. In addition, the Louisiana Department of Health and Human Resources collects samples for bacteria analysis at 208 stations statewide. The above listed monitoring stations are located in eleven stream basins which are subdivided into 113 stream segments. Currently, 92 of these stream segments are classified as effluent limited and 21 as water quality limited. Preliminary indications from an ongoing study to review and revise the segment classifications show that the number of water quality limited segments will most likely increase. There are eighteen segments within the State that can be classified as severely polluted and are considered to be unacceptable with respect to meeting the goals of the Clean Water Act.

WPCD also uses intensive surveys to further define water quality in the State of Louisiana. Between FY 78 and FY 82, 69 intensive surveys were completed. These surveys are being used to assess segment classifications as well as developing defensible wasteload allocations for municipal dischargers.

LDNR is currently issuing State permits and collecting a State permit fee from all dischargers in Louisiana. Although LDNR has not drafted National Pollutant Discharge Elimination System (NPDES) permits in recent years, an effort toward the drafting of NPDES permits will be undertaken in FY 83. Louisiana has expressed interest in accepting the delegation of the NPDES program in the near future. A tabulation of NPDES permits issued in the Region and in the State of Louisiana is included in Table D.

Within these eleven stream basins, the Louisiana Water Quality Management Plan states that there will be a 26.6% increase in population between 1970 and 2000. The 1980 population was projected in the WQM Plan to be 3,984,432 and growing to 4,632,220 by 2000. The greatest growth rates were predicted to be in the Barataria, Lake Pontchartrain, and Terrebonne basins. The standard metropolitan statistical areas (SMSAs) were predicted to have an average population increase of 30.3%. SMSAs predicted to have the greatest growth rates in the WQM Plan were Baton Rouge, Lafayette, Monroe, and New Orleans.

WATER QUALITY

Despite the growth in the population and industry in the State, the overall water quality has remained reasonably constant. Each of the eleven river basin systems has several parameters of concern to the citizens of Louisiana. The basins and concerns are as follows:

Atchafalaya - sediment/turbidity.
Barataria - dissolved oxygen.
Calcasieu - chlorides, sulfates, dissolved oxygen, pH, temperature, taste, and odor.
Lake Pontchartrain - dissolved oxygen and pH.
Mermentau - Vermilion - Teche - dissolved oxygen, sulfates, pH, and coliform.
Mississippi - coliform, salt water intrusion, phenols, and other toxics.
Ouachita - chlorides, sulfates, dissolved oxygen, pH, and pesticides.
Pearl - occasional pH and coliform.
Red - dissolved oxygen, pH, turbidity, and coliform.
Sabine - chloride, sulfate, dissolved oxygen, and coliform.
Terrebonne - coliform and dissolved oxygen.

Although the parameters listed above indicate areas of concern in Louisiana waters, some of these problems can be attributed to natural conditions. These include sediment carried by the Atchafalaya River; seasonal low flows in the Calcasieu and Ouachita Rivers; and flow from back water swamp areas in the Calcasieu, Ouachita, and Sabine Rivers. In other Louisiana waters, some of the problems can be attributed to increasing population and the need for better municipal treatment and/or urban stormwater runoff control in the Barataria basin, the Lake Pontchartrain basin, the Mermentau-Vermilion-Teche basin, and the Terrebonne basin. In recent years the Calcasieu and Pearl River basins have shown improvements in water quality due to water pollution control activities.

There is also concern in Louisiana over the concentration of pesticides in the heavily agricultural areas of the State. LDNR is conducting a semi-annual pesticide sampling program at 72 sites around the State to assess the extent of the problem. No conclusions have been drawn on these studies as yet.

Figures 1, 2, and 3 present information relating to violations of the Louisiana Water Quality Standards for dissolved oxygen, pH, and coliform at the 119 stream monitoring stations throughout the Region. Figure 4 illustrates the water in quality status and trends for the eleven river basins in Louisiana.

PART II - SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS -

SIGNIFICANT PROBLEMS

The eleven water quality basins in the State of Louisiana vary in population density and growth rate, water quality and quantity, fresh water versus salt water, and kinds of problems and accomplishments. The major point sources of pollution are municipalities and industries. The major nonpoint sources of pollution are agricultural runoff, urban runoff, salt water intrusion, and residual wastes. Of principal concern to the State of Louisiana are the

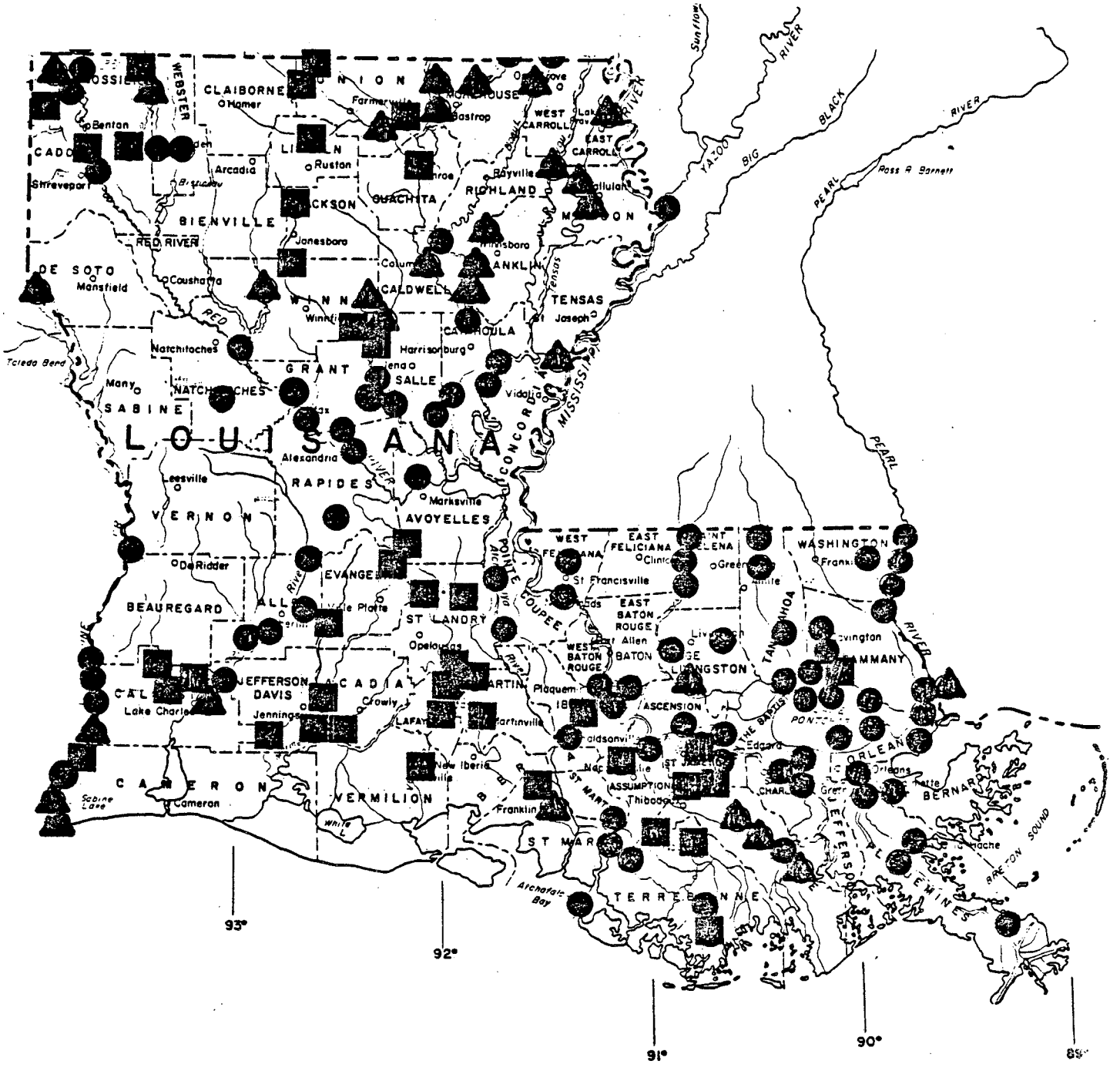


Figure 1

Dissolved Oxygen % Exceedence

● 0-9%

▲ 10-24%

■ ≥ 25%

(≥30 samples between 1978-1981)

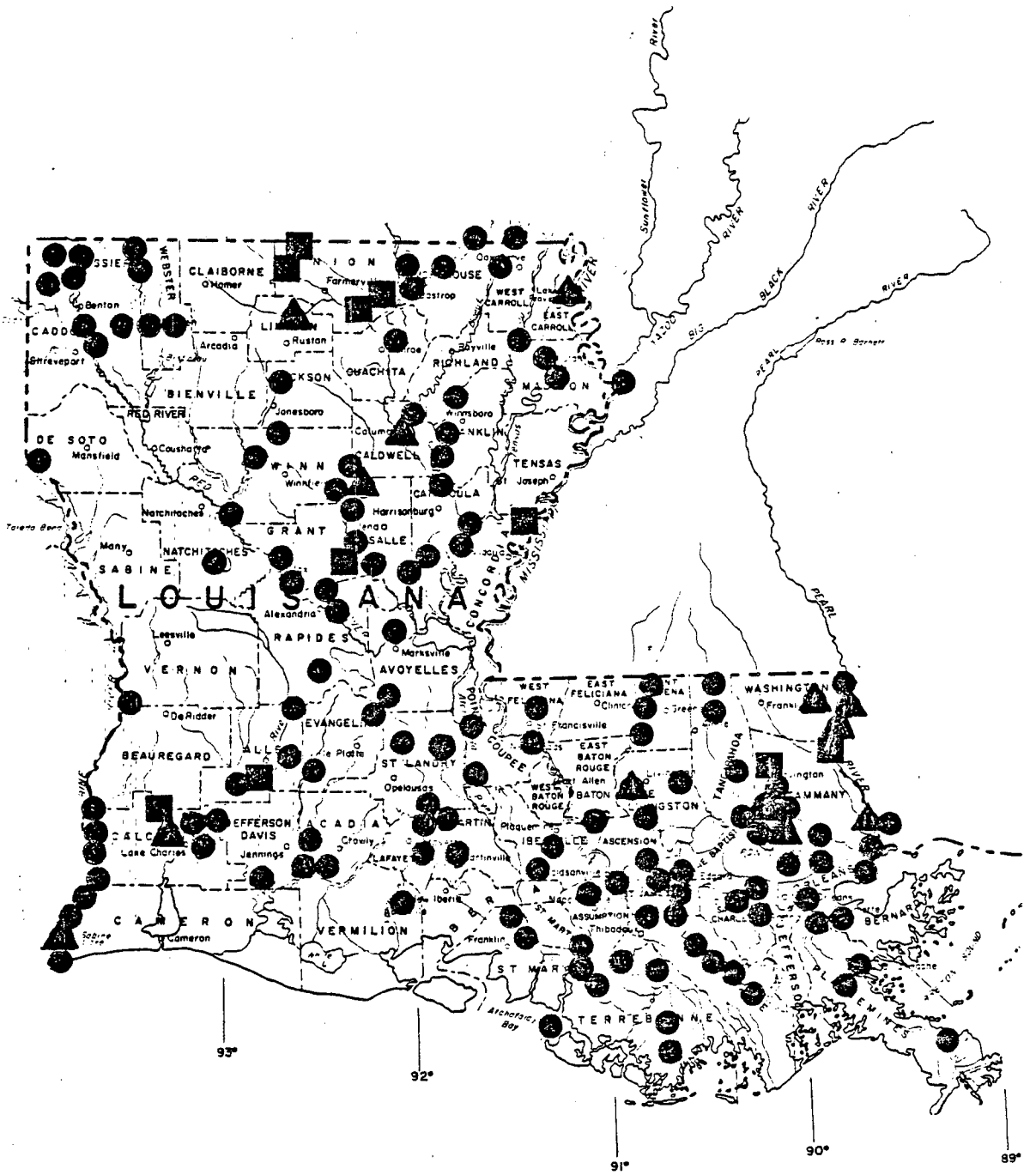


Figure 2

pH % Exceedence

● 0-9%

▲ 10-24%

■ ≥ 25%

(≥30 samples between 1978-1981)

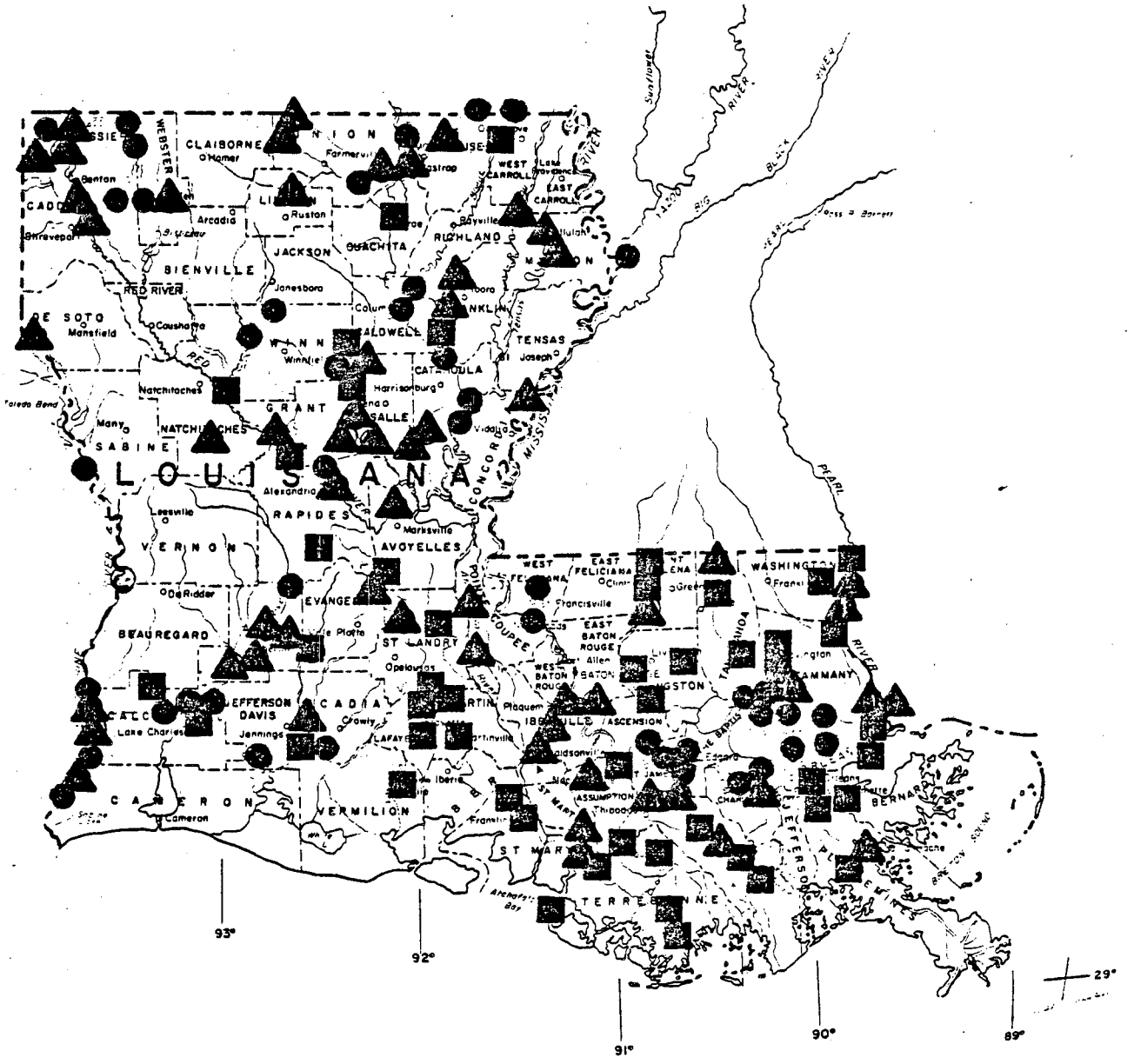


Figure 3

Coliform % Exceedence

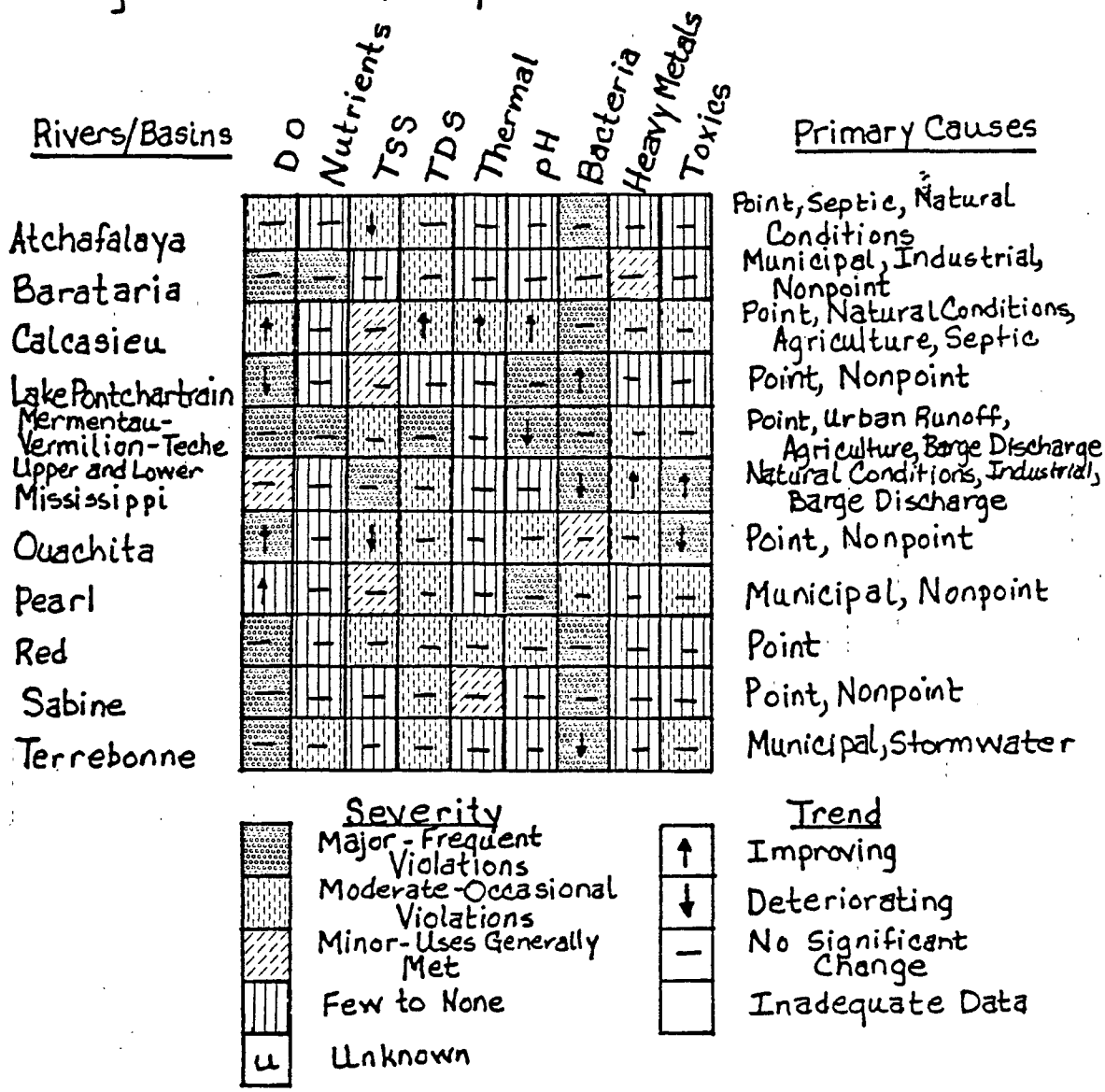
● 0-9%

▲ 10-24%

■ ≥ 25%

(≥ 15 samples between 1978-1981)

Figure -Water Quality Status and Trends-Louisiana



many industrial dischargers located along the Mississippi River, the source of drinking water supply for New Orleans. Other areas of concern include the threat of pesticide contamination in highly agricultural areas; bacterial contamination in shellfish areas due to raw or inadequately treated municipal sewage; the degradation in the water quality of Lake Pontchartrain; and the large concentration of industrial dischargers in the Calcasieu River basin. Also of concern are the impacts associated with oil and gas production, particularly in the coastal marsh and near offshore areas.

PRINCIPAL BARRIERS

Louisiana, a prime sunbelt state, has experienced a large population increase in recent years which was not predicted. This has caused many municipal sewage treatment facilities to be undersized and inefficient, resulting in the discharge of raw or inadequately treated municipal sewage into State streams. With this growth has also come equivalent, if not greater growth in the industrial sector, which is also discharging into the waters of Louisiana.

With the increased population and industrial growth, the State water pollution control program has had to expand to meet the new and changing needs of the State. Federal funding has only increased slightly while the program is expanding in the need for more water quality monitoring and enforcement activities. Louisiana has instituted a completely new State funded surveillance and enforcement program on the lower Mississippi River.

IMPLICATIONS FOR AGENCY MANAGEMENT

WATER QUALITY

Louisiana Department of Natural Resources is currently reviewing and revising the State Water Quality Standards based on new ambient and intensive survey data. These revised Water Quality Standards should be available during FY 83.

EPA has funded the State through the Section 208 Water Quality Management Program to develop the needed effluent limits for municipal dischargers, to reclassify the stream segments, to develop nonpoint source control plans, to revise the State population projections for water quality planning, and to assess agricultural best management practices. In addition, several studies are underway to assess the impact of toxic substances on certain Louisiana waters.

CONSTRUCTION GRANTS

Louisiana has modified its construction grant priority rating system to meet the requirements of P.L. 97-117. The priority system ranking formula includes a segment ranking factor which is based on whether the segment is effluent limited or water quality limited and the number of Water Quality Standard parameters violated.

Louisiana's naturally slow moving streams and bayous play a large role in surface water related problems which can be attributed to inadequate municipal wastewater treatment. These problems exist statewide to some extent. More than 30 Federally assisted projects are underway in the southern third of the state where low stream dissolved oxygen levels and bacterial contamination are affecting fish and numerous shellfish beds.

EPA has recently funded LDNR for the training of wastewater operators. LDNR is developing a strategy for the use of these funds.

Since 1956 over 718 construction grants totaling over $ 457,708,709 in Federal funds have been awarded in the state of Louisiana. This includes 209 grants awarded under P.L. 84-660 and 509 grants awarded under P.L. 92-500. A further breakdown is as follows:

	Number of Grants	Amount Awarded
P.L. 84-660	209	$ 126,493,937
P.L. 92-500		
- Step 0 Delegation	0	$ 0
- Step 1 Planning	263	$ 28,149,104
- Step 2 Design	99	$ 26,838,065
- Step 3 Construction	76	$ 209,439,528
- Step 4 (2+3)	71	$ 66,788,075
- Step 5 Advance of Allowance	0	$ - 0 -
- Step 6 WQM Planning	0	$ - 0 -
- Step 9 State Training Center	0	$ 0
P.L. 92-500 Total	509	$ 331,214,772

To date the P.L. 84-660 projects have resulted in the construction of many treatment works including 177 treatment plants. Many of the P.L. 92-500 projects are still under way. As of October 1, 1982, the Step 3 and 2+3 grants have resulted in the completion of 47 treatment plants as well as other treatment works such as major interceptors, sludge handling facilities and lift stations.

NPDES PERMITS

LDNR is currently placing a very concerted effort on compliance of dischargers to the Mississippi River. This effort should result in more surveillance, better enforcement of State and NPDES permits, and a decrease in illegal discharges to the river. A tabulation of NPDES permits issued in the Region and the State of Louisiana is included in Table D.

COMPLIANCE

At the end of FY 82, the State's industrial NPDES permit compliance rate was 80% and the municipal NPDES permit compliance rate was 45%.

To initiate implementation of Region 6's municipal enforcement policy in FY 82 and FY 83, EPA and the LDNR have directed efforts to affect municipal NPDES permit compliance in oyster bed closures areas due to ambient waters contamination along Louisiana coastline (Atchafalaya, Fourleague, Terrebonne, and Barataria Bay areas) through compliance inspections, enforcement conferences, Administrative Orders and initiation of litigation with four municipalities and three Parishes affecting twenty-three wastewater treatment facilities.

During FY 82, negotiations involving LDNR, EPA and Jefferson Parish officials resulted in a decision to discharge treated domestic wastes from the Parish's seven East Bank facilities to the Mississipi River in lieu of the present discharge locations into Lake Ponchartrain. This will bring the East Bank facilities into compliance with their NPDES permits at a faster pace and relieve the impact of their discharge to Lake Pontchartrain.

During the last decade, permitting and enforcement efforts by EPA and LDNR have resulted in dramatic reductions in total pollutant loadings in the Lower Mississippi River (Baton Rouge to New Orleans).

Examples of these reductions are illustrated in Figures 5, 6, and 7 and 8. Summarizing these figures:

Phenolics	- 90% reduction
Total Chlorinated Hydrocarbons	- 89% reduction
Oxygen Demanding Pollutants	- 85% reduction
Chromium	- 98% reduction

During FY 82 and the first quarter of FY 83, EPA issued 15 Administrative Orders to industrial NPDES permittees in this area and 18 Administrative Orders to municipalities during this same period. EPA initiated litigation proceedings against one industrial and three municipal permittees in Louisiana during this period. LDNR issued 134 Compliance Orders in the entire State and assessed administrative penalities totaling $935,500 against four industrial permittees on the lower Mississippi in calendar year 1982.

Based on latest available data, only three industrial permittees in the Baton Rouge-New Orleans corridor were significantly noncompliant with their NPDES permits.

Figure 5-- **PHENOLICS**
MAJOR INDUSTRIAL DISCHARGES
LOWER MISSISSIPPI RIVER

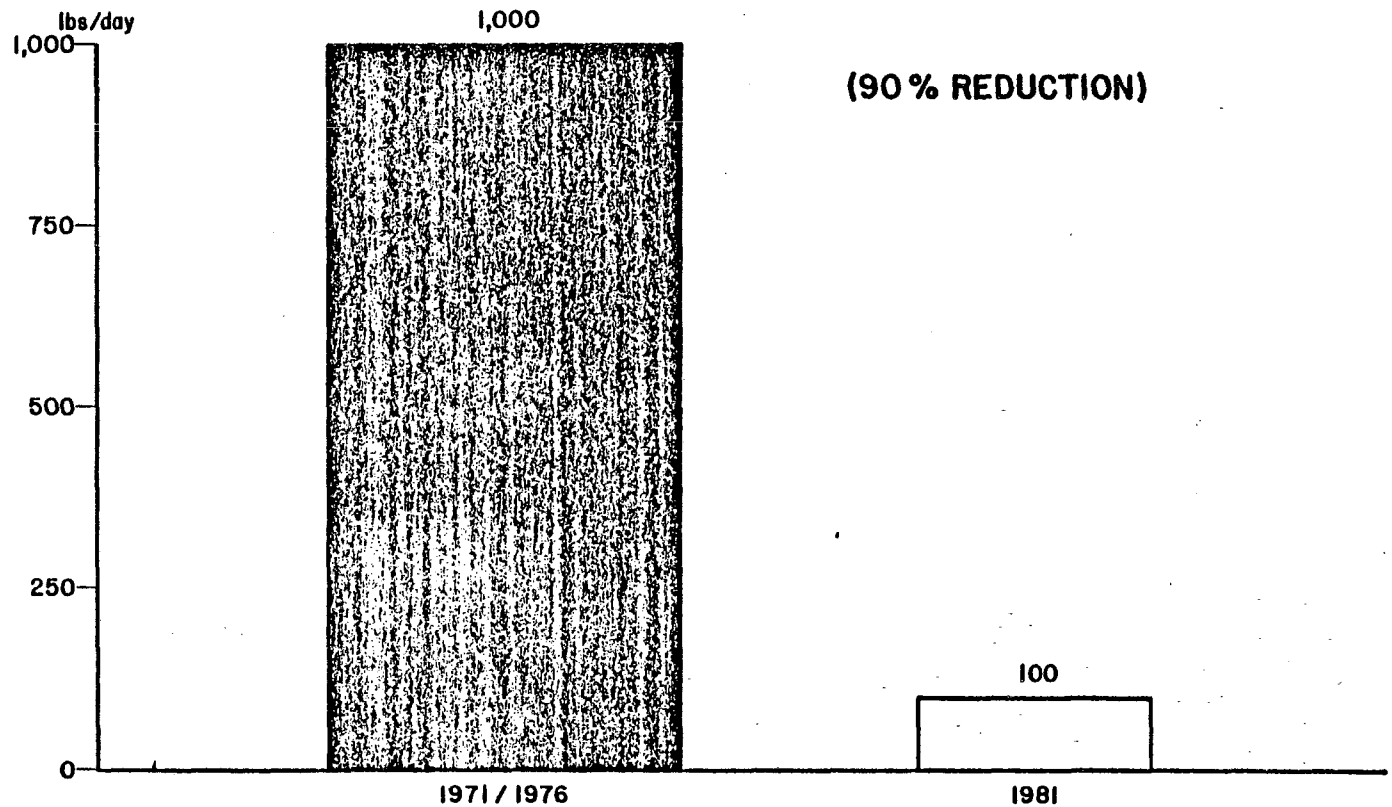


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Figure 6 -- TOTAL CHLORINATED HYDROCARBONS
MAJOR INDUSTRIAL DISCHARGES
LOWER MISSISSIPPI RIVER

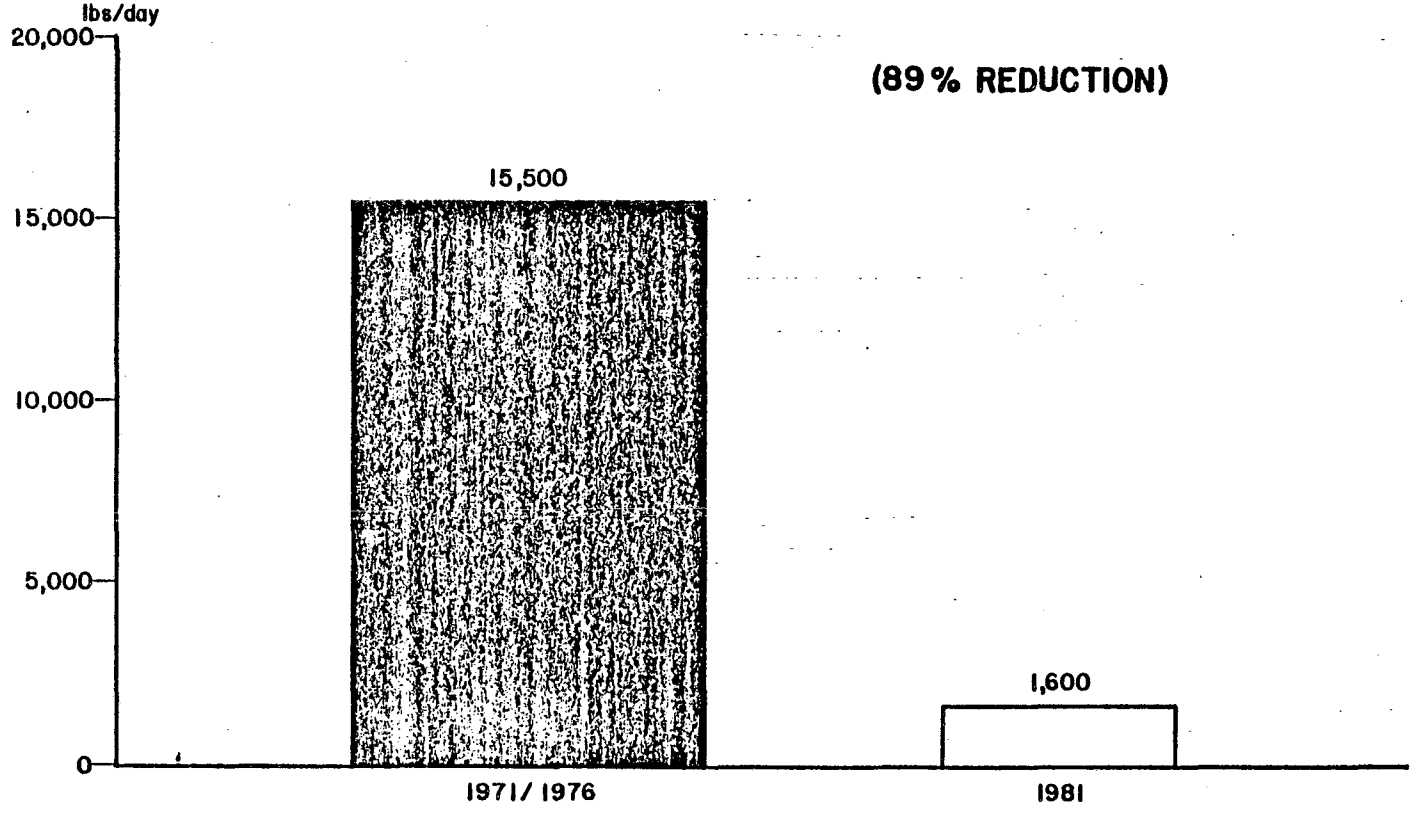

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Figure 7 -- CHROMIUM
MAJOR INDUSTRIAL DISCHARGES
LOWER MISSISSIPPI RIVER

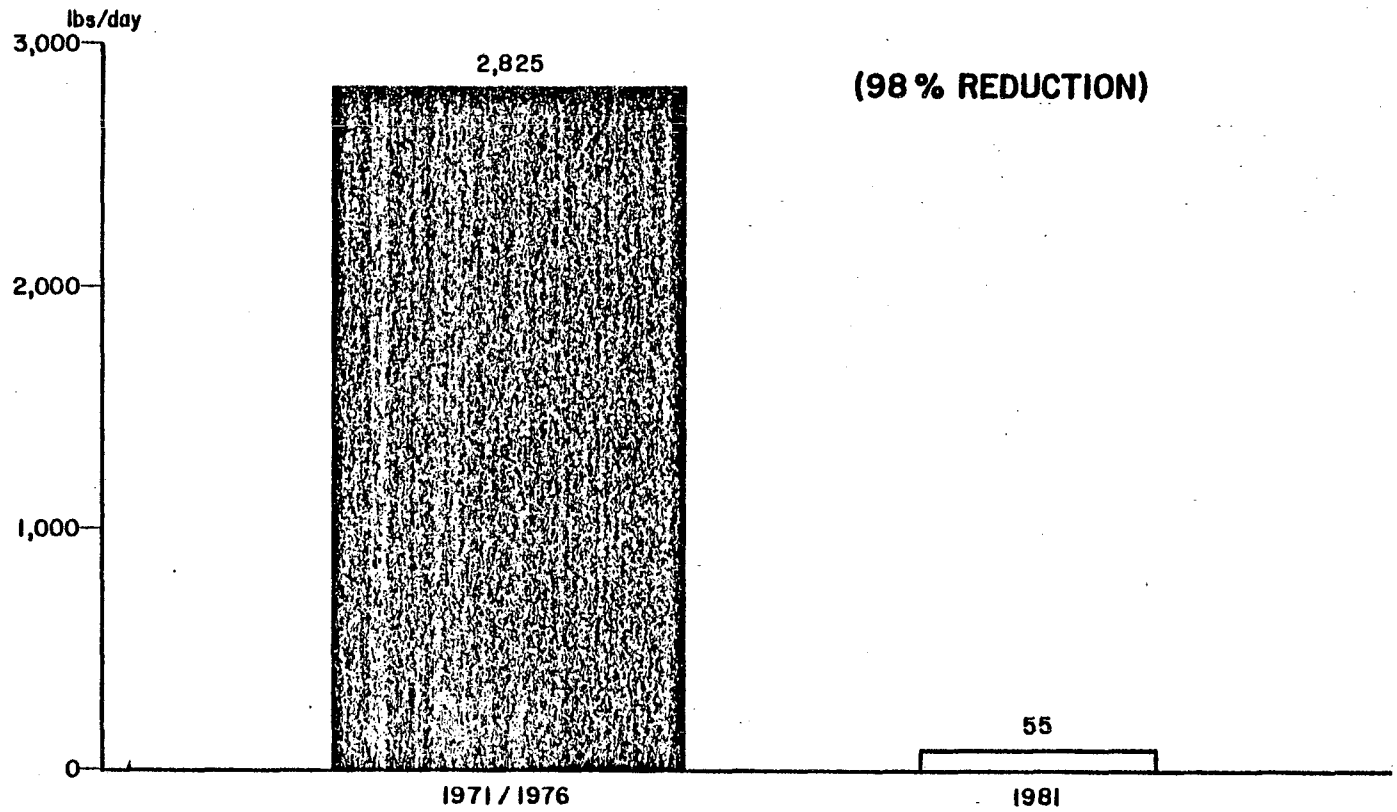

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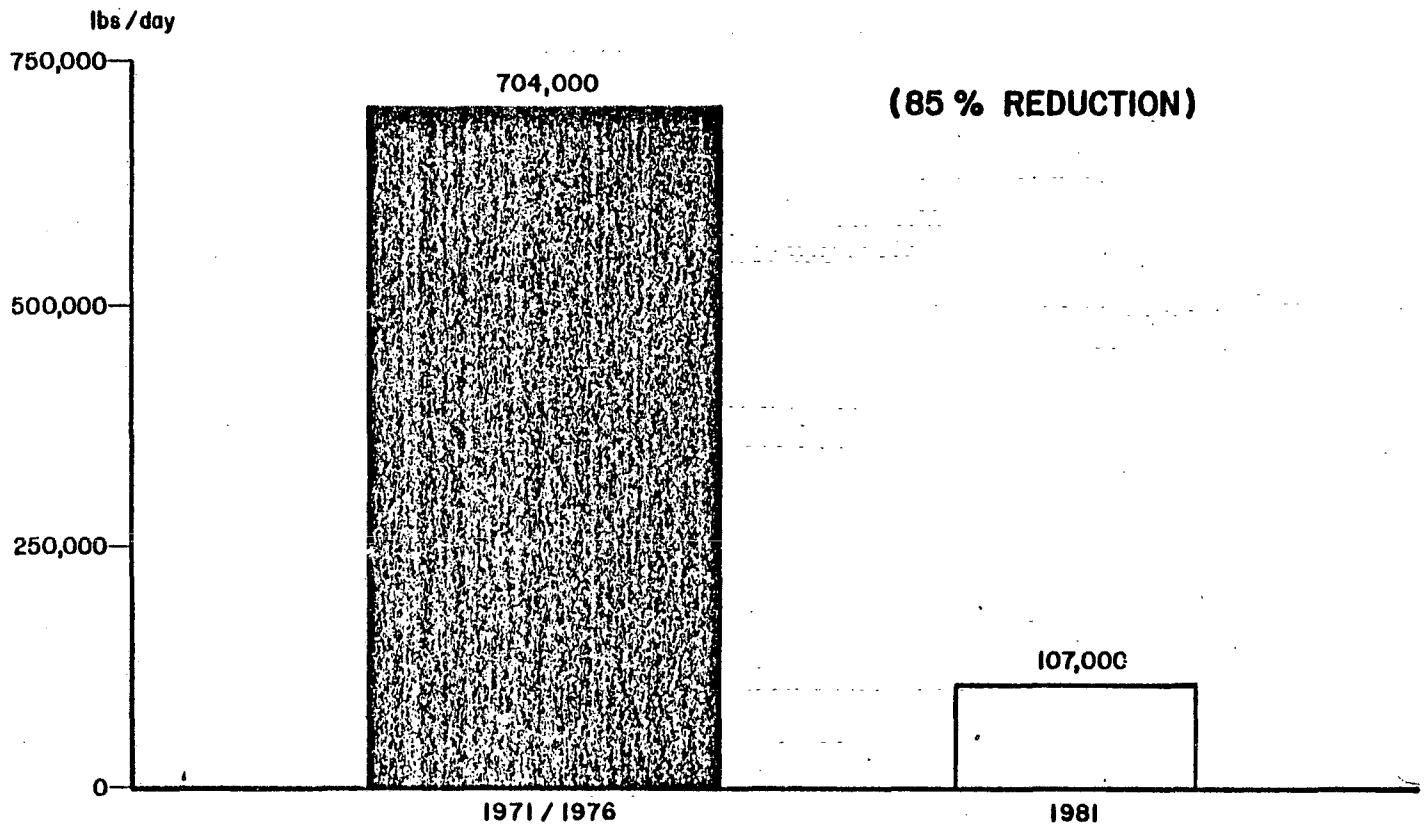
Figure 8 -- OXYGEN DEMANDING POLLUTANTS
MAJOR INDUSTRIAL DISCHARGES
LOWER MISSISSIPPI RIVER



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PART I - OVERVIEW OF ENVIRONMENTAL STATUS AND TRENDS

INTRODUCTION - NEW MEXICO

New Mexico is the fifth largest of the 50 States. Of the total area, 46.0 percent is public lands, 9.4 percent Indian lands, and 44.6 percent privately owned lands. About 82 percent of the land area is devoted to grazing. Cropland uses less than 3.5 percent, less than half of which is used for irrigated agriculture. Urban and built-up lands constitute less than 1 percent of the State's total land area.

The 1980 State population was 1,302,894, an increase of 28 percent over the 1970 population of 1,017,055. It is estimated that over 70 percent of the population resides in urban areas. Future population increase to the year 2000 is projected to be 1,790,400 and is expected to be associated with the larger cities in the State, while the rural population is anticipated to remain static.

New Mexico's water supply is unevenly distributed throughout the State. The quality of its waters also varies from place to place. Generally, water originating in the high mountains is of excellent quality. Water in the lower areas frequently is of lesser quality due to the presence of more readily soluble minerals.

Approximately 95% of the water supplied by public water supply systems is from groundwater sources. Three-fourths of the State's population is supplied drinking water by these systems. One-half of the total water annually withdrawn for all uses in New Mexico is groundwater and this is the only source of water in many areas of the State. Agricultural operations are the biggest user of water in New Mexico.

SURFACE WATER QUALITY

Data from 64 monitoring stations throughout the State for the period 1976-1981 (water years) indicate that stream water quality is good, in general, when compared to the Water Quality Standards. There are five major river basins in New Mexico. They are the Rio Grande, Pecos, San Juan, Lower Colorado and the Arkansas-White-Red. In addition, there are several closed basins in New Mexico.

Water quality is consistent with standards in over 90 percent of the estimated 3,500 miles of perennial streams in New Mexico. Significant standards violations, caused by both point and nonpoint source pollution, were recorded in an estimated 200 miles of perennial streams distributed among 6 of the 59 designated stream segments. In addition, occasional stream standards violations were recorded in eight stream segments.

Table B summarizes significant stream water quality violations, in New Mexico between 1967 - 1981.

Table B: Significant Stream Water Quality Violations

Stream Reach	Standards Violations	Cause
Mimbres	phosphorus, temperature pH, total organic carbon fecal coliform bacteria	unknown
Red River	phosphorus, stream bottom deposits, turbidity	municipal wastewater, mining discharges
Rio Hondo	phosphorus, chlorine	municipal wastewater, domestic wastewater
Rio Grande	fecal coliform bacteria	terrestrial runoff
Rio Ruidoso	phosphorus, chlorine, ammonia, DO, fecal coliform total organic carbon, turbidity	municipal and domestic wastewater
Pecos River	DO, plant nutrients, odor	municipal wastewater, low stream flow caused by hydrologic modification and diversion.

Figures 1, 2, and 3 present information relating to violations of Water Quality Standards for dissolved oxygen, pH and coliform at stream monitoring stations throughout the State.

GROUNDWATER QUALITY

The New Mexico Environmental Improvement Division (EID) has identified 105 sites in New Mexico with documented or suspected groundwater contamination. The nature and extent of the contamination involved in these 105 sites vary greatly. Of the 105 sites, 43 are associated with oil and natural gas production and refinement. Of the 62 remaining, regulatory actions have been or will be initiated against 22; sources have been identified. but no regulatory action is currently planned against an additional nine sites; groundwater contamination is no longer occurring at 10 sites; and the current status of 10 sites remains unknown, as no specific individual sources has been identified.

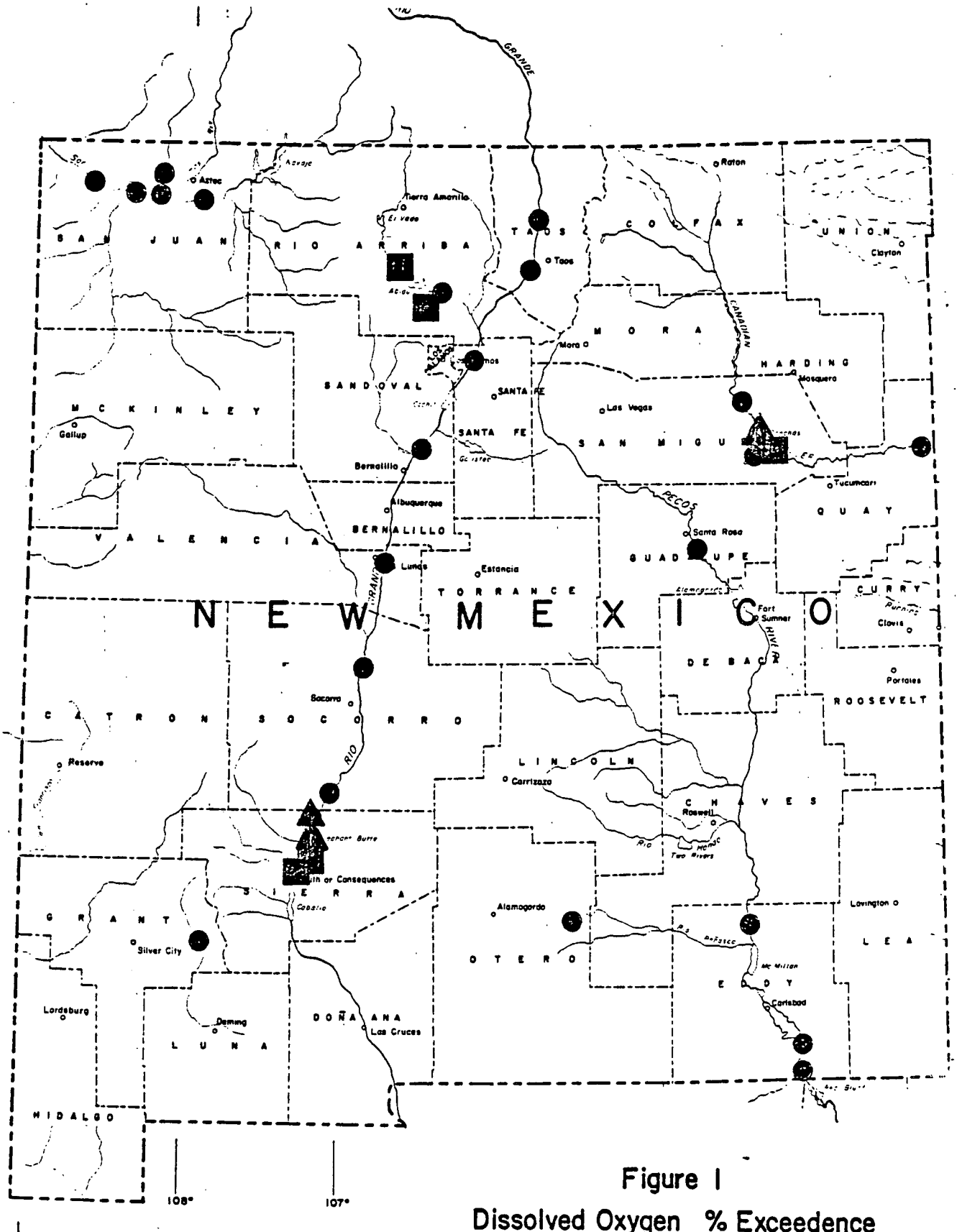


Figure 1

Dissolved Oxygen % Exceedence

● 0-9%

▲ 10-24%

■ ≥ 25%

(≥30 samples between 1978-1981)

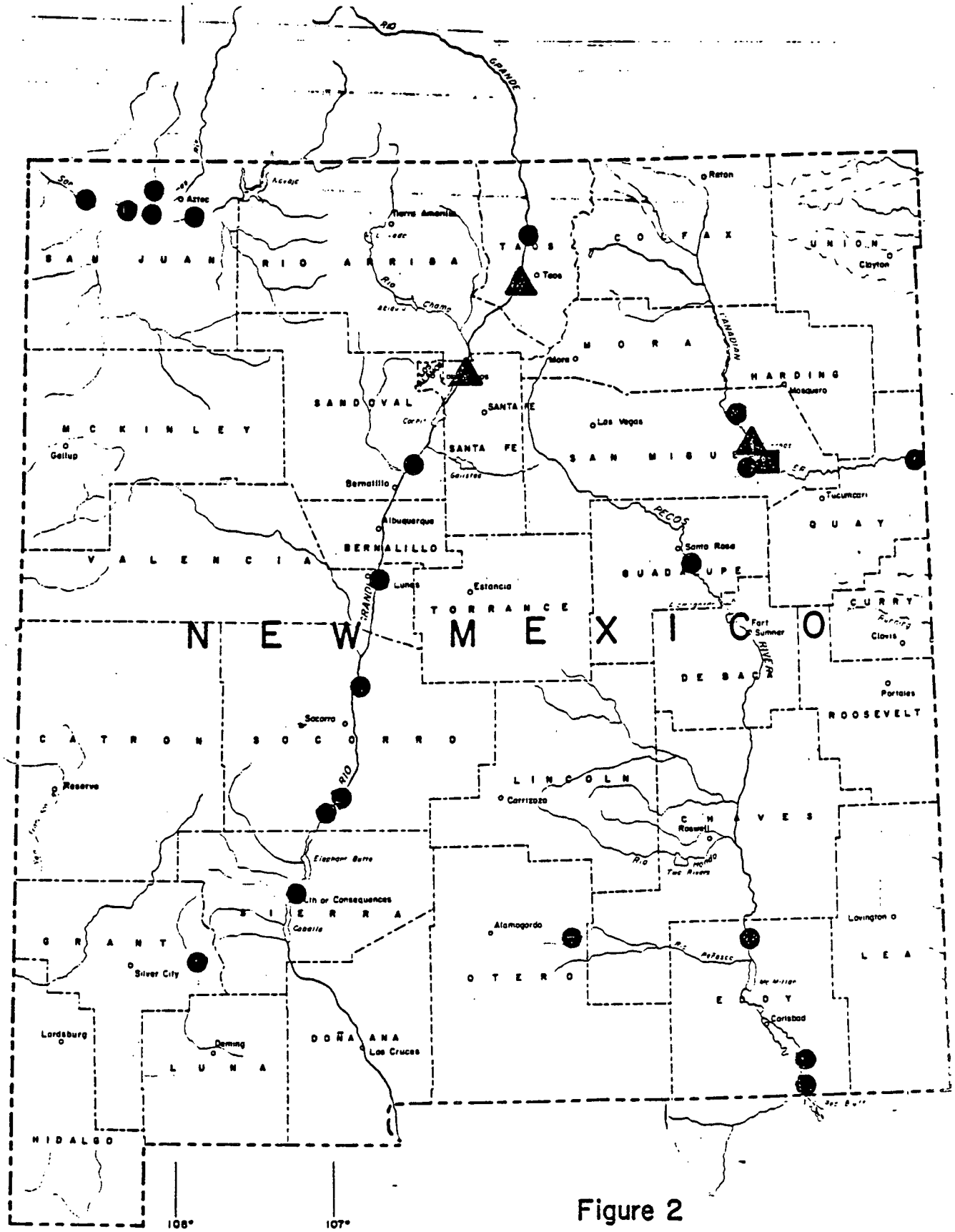


Figure 2

pH % Exceedence

● 0-9%

▲ 10-24%

■ ≥ 25%

(≥30 samples between 1978-1981)

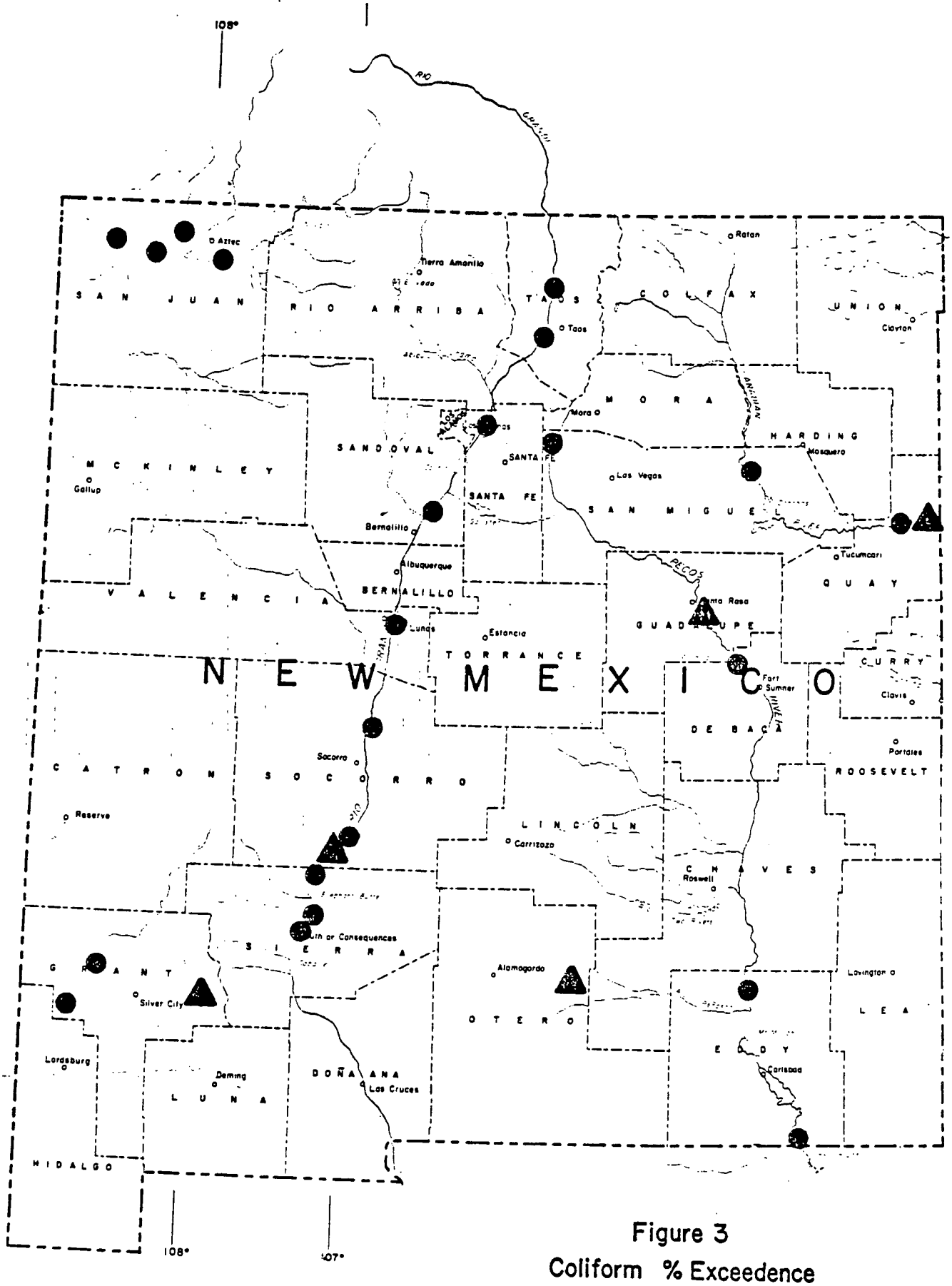


Figure 3

Coliform % Exceedence

● 0-9%

▲ 10-24%

■ ≥ 25%

(≥15 samples between 1978-1981)

In addition to these cases, the State has identified five major areas of saline intrusion, or regions where naturally mineralized water is intruding into a freshwater aquifer.

PART II - SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS

SIGNIFICANT PROBLEMS

The Water Quality Control Commissions (WQCC) Groundwater Regulations have numeric standards for a limited number of toxic substances. Additional numeric standards for toxic substances are needed to regulate dischargers of pollutants that may be toxic.

Groundwater monitoring (Statewide) is not comprehensive enough to determine the extent of groundwater contamination. Hydrocarbon fuels have contaminated groundwater at several locations in the State. Also there is suspected contamination of groundwater by septic tanks and manure-holding ponds. There is a need to determine where the most serious problems are located and to address those problems first. In addition, the system of groundwater data handling needs to be streamlined.

The Bureau must continue to focus on prevention of ground water pollution through regulation of discharges to ground water under approved discharge plans as ground water pollution is difficult to correct once it has occurred. Discharges of concern include domestic wastewater effluents, dairy effluents, base and precious metal milling discharges, and hydrocarbon fuel leaks.

Questions were raised about the impact of nutrients from wastewater treatment plants on Cochiti Reservoir, even before the reservoir filled. Those questions still remain unresolved.

Moutain streams are a valuable resource in New Mexico, because they provide aesthetic beauty, support high quality trout fisheries, and sometimes serve as a source of domestic water supplies. Yet, the ability of these streams to assimilate pollutants, especially nutrients, if often limited.

Current surface monitoring is based upon a strategy developed in the 1970s. All aspects of this monitoring strategy need to be reviewed to determine if the monitoring strategy serves current monitoring needs. Moreover, the strategy needs to be integrated into the priority stream segment approach.

PRINCIPAL BARRIERS

Current State surface water regulations do not adequately regulate all types of discharges to surface waters. That, combined with limited federal enforcement, may promote continuing noncompliance.

Small package treatment systems are expected to increase in number as a result of Sunbelt migration and tourism. Such systems often do not receive adequate operation and maintenance. In mountain areas discharges may be to streams used for domestic water supplies. These small wastewater disposal systems can result in water pollution and public health risks and require State compliance efforts in disporportion to their size.

Lack of adequate resources for regulatory implementation, directed toward groundwater discharge plan review and approval, has resulted in limited compliance monitoring to determine whether requirements set forth in approved discharge plans are met. This has limited the effectiveness of the evaluation of discharge plans in preventing ground water pollution.

Municipal management of wastewater treatment facilities is a serious problem in New Mexico. Despite NMEID's compliance and enforcement activities and emphasis on effective start-up of new constructed plants, inadequately operated and maintained wastewater treatment facilities and noncompliance with permit conditions continue to be a problems. To properly manage a wastewater facility, municipal management must establish clear lines of responsibility and authority for operating the facility, set an equitable fee system to obtain adequate supporting revenues, and establish an adequate budget and procedures for ongoing facility operations, long term maintenence and replacement and emergency repairs. Most of this problem lies beyond NMEID's expertise and jurisdiction and can do little beyond recognizing that the problem continues to exist.

IMPLICATIONS FOR AGENCY MANAGEMENT

WATER QUALITY - SURFACE AND GROUND

Planning efforts to identify best management practices to reduce surface water contamination from nonpoint sources continue to be studied. The New Mexico Soil and Water Conservation Division (SWCD) and the New Mexico Forestry Division are nearing completion of studies evaluating the cost effectiveness of various management practices to reduce or eliminate soil erosion. SWCD is developing a system to identify specific priority areas and to track the implementation of conservation practices. The Forestry Division is evaluating the extent and effectiveness of management practices by assessing 20 recent timber harvests.

EID is identifying priorities for stream segments and enforcement activities.

In both 1980 and 1981, as an example of the significance New Mexico attaches to groundwater quality protection, almost fifty percent of the EID's total water pollution control program budget was spent in support of its groundwater protection programs.

Primary emphasis in the groundwater pollution control program has been placed on reviewing proposed discharge plans and on insuring that all new facilities subject to regulatory control develop and implement programs to protect groundwater. The concentration of effort has been on implementation of the State's groundwater regulations and not on compliance with them. Currently 51 dischargers are not submitting self-monitoring reports. A lack of State resources in the compliance area has existed, however the State is presently re-adjusting this posture.

In implementing groundwater regulations, the State has pursued court action twice to require submission of discharge plans.

NMEID is developing a stream priority ranking system in order to identify surface waters where NMEID needs to concentrate its resources. The ranking is based upon violations of stream standards, vulnerability of designated uses, information needs, and the need for enforcement actions against point source discharges. The broad range of information needs includes delineation of the extent and causes of known or suspected water quality problems, assessment of the effectiveness of point source controls, including newly completed construction grants projects, water quality standards assessments, wasteload allocation assessments, and background water quality investigations. The priority stream segment ranking system is expected to serve as an integrated ranking system for the NMEID's surface water activities.

New Mexico has revised their surface water regulations to allow for more effective compliance and enforcement efforts. In order to determine where to target enforcement resources, an enforcement rating system is being developed to identify those municipal discharges which are priorities for enforcement actions.

In the last two years, the State adopted four significant changes or additions to the State's Water Quality Standards and regulations. It adopted as part of the groundwater regulations a generic definition of "toxic pollutant" to control over 70 listed toxic substances in concentrations which, upon exposure, injection, or assimilation either directly or through the food chain, will unreasonably threaten human health or the health of plants or animals commonly cultivated or protected by man for food or economic benefit. Further, the WQCC adopted numeric limitations for eight toxic pollutants which have been found in groundwater in New Mexico.

CONSTRUCTION GRANTS

The New Mexico construction grant priority rating system meets the requirements of P.L. 97-117. The rating formula ranks projects based on their demonstrated impact on the receiving stream water quality.

One primary area of attention with regard to municipal wastewater treatment is in Albuquerque. Several grant projects have been completed, are underway, or are planned, to address the pollution abatement in the Rio Grande and to address sludge reuse. Communities, such as Red River and Chama, are also important because they are located on high quality cold water mountain streams, which have little or no assimilative capacity.

Since funding was initiated in 1968, 62 New Mexico communities have constructed wastewater facilities. Since 1970, the State has provided over $25,000,000 to match $133,000,000 in Federal funding.

Since 1956, over 277 construction grants totaling over $ 140,556,927 in Federal funds have been awarded in the state of New Mexico. This includes 141 grants awarded under P.L. 84-660 and 136 grants awarded under P.L. 92-500. A further breakdown is as follows:

	Number of Grants	Amount Awarded
P.L. 84-660	141	$ 30,299,931
P.L. 92-500		
- Step 0 Delegation	0	$ 0
- Step 1 Planning	54	$ 3,138,034
- Step 2 Design	34	$ 5,928,966
- Step 3 Construction	41	$ 98,406,581
- Step 4 (2+3)	5	$ 2,165,314
- Step 5 Advance of Allowance	0	$ 0
- Step 6 WQM Planning	1	$ 118,101
- Step 9 State Training Center	1	$ 500,000
P.L. 92-500 Total	136	$ 110,256,996

To date the P.L. 84-660 projects have resulted in the construction of many treatment works including 94 treatment plants. Many of the P.L. 92-500 projects are still under way. As of October 1, 1982 the Step 3 and 2+3 grants have resulted in the completion of 31 treatment plants as well as other treatment works such as major interceptors, sludge handling facilities and lift stations.

NPDES PERMITS

In New Mexico, the USEPA is responsible for issuing and enforcing NPDES permits. The State assists the USEPA in administration of the NPDES system and is responsible for enforcing State surface water regulations. In 1981, 55 NPDES inspections were made by the EID. Of the total, there were 38 municipal wastewater facilities inspections and 17 industrial or other facilities inspections, including schools and a private conference center.

A tabulation of NPDES permits issued in the Region and the State of New Mexico is included in Table D.

PART I - OVERVIEW OF ENVIRONMENTAL STATUS AND TRENDS

INTRODUCTION - OKLAHOMA

Oklahoma is estimated to have approximately 663,000 acres of major reservoirs, 23,000 miles of streams, and 53,000 acres of wetlands. With the steady immigration of population which started in the 1960's, a growth trend has continued in the State focusing mainly on cities with a population of over 2,000. Based on the Oklahoma Employment Security Commission population projections released in 1981, Oklahoma's growth will continue with a 23% increase projected from 3,025,290 in 1980 to 3,873,000 by the year 2000.

Oklahoma has two major rivers, the Arkansas and the Red. The amount of water leaving the State annually through these 2 basins is approximately 34 million acre-feet. Despite these quantities, State-established beneficial uses of the rivers are somewhat limited due to poor water quality. In western Oklahoma natural salt springs and salt flats affect local streams by increasing the ionic content. In populous central and eastern Oklahoma, municipal and industrial effluents influence the water quality of many streams. Many of the streams in eastern Oklahoma are of excellent water quality although point source dischargers affect a number of streams here as well.

WATER QUALITY

The Arkansas River enters Oklahoma from Kansas with poor water quality due to enrichment and mineralization. Kaw Reservoir acts as a nutrient sink, so that water quality improves downstream from the reservoir. There is a major decline in water quality downstream from Tulsa. Many tributaries in the Arkansas River basin show degradation, much of which is due to point source discharges from municipalities and industries. Specific tributaries with major degradation include portions of the North Canadian River, the Illinois River, and the Cimarron River. Toxic metals and organic compounds were detected at various sites in the Arkansas River basin.

The Red River shows continued enrichment and mineralization as well as elevated levels of some metals. The lower Red River below Lake Texoma displays gradual improvement, with decreasing levels of mineralization and low levels of toxic metals, but high levels of iron and manganese. Due to these factors, fish communities show increasing diversity downstream with improving water quality conditions. Tributaries in the Red River-Basin are, in general, improving or stable. The one exception is the Beaver Creek watershed, which shows severe degradation primarily from increased enrichment and toxics.

The results of recent reservoir studies show that Oklahoma reservoirs are, in general, free of dangerous levels of toxic chemicals. PCBs are the most common organic toxic found in fish tissue and were detected in low levels in 44 reservoirs. Nevertheless, only at Fort Gibson Reservoir were FDA Alert Limits for PCBs in tissue samples exceeded. However, further sampling indicated that this problem was not as severe as initially anticipated. Chlordane was found in 40 reservoirs, with only Lake Hefner and Northeast (ZOO) Lake showing levels exceeding FDA Alert Limits. DDT was present in 11 reservoirs, with the highest level found in Fort Cobb Reservoir. DDT levels were well below FDA limits. Aldrin, Heptachlor, and Toxaphene were present in a few reservoirs, but were also below FDA limits.

Figures 1, 2, and 3 present information relating to violations of Water Quality Standards for dissolved oxygen, pH and coliform at stream monitoring stations throughout the Region.

PART II SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS

SIGNIFICANT PROBLEMS

ARKANSAS MAIN STEM AND TRIBUTARIES

The Arkansas River in Oklahoma is a mineralized, enriched stream. Mineralization is primarily due to naturally occurring high chlorides in the Salt Fork and Cimarron River watersheds, with enrichment occurring in the upper segment from the state line to Muskogee due to high phosphorus and nitrogen loading from above Kaw Reservoir and the Salt Fork, Black Bear Creek, Cimarron River, and Verdigris River watersheds. Marked improvement in water quality is observed at stations downstream from Muskogee to the Arkansas state line. Temporal trends indicate stable quality conditions throughout the main stem.

The Cimarron River assimilates wastewater from fifty municipal and nine industrial point sources, most by way of Salt Creek, Cottonwood Creek, and Skeleton Creek tributaries. In particular, Skeleton Creek and Cottonwood Creek have a history of severe water quality degradation due to point source dischargers. The Cottonwood Creek watershed, which includes the Chisholm, Bluff, and Deer Creek tributaries, is currently under intensive wastewater treatment plant upgrading.

Marked degradation in water quality continues in the Sand Springs-Tulsa segment of the Arkansas River due to inadequate wastewater treatment in these municipalities. However, temporal trends indicate that recent completion of expanded municipal wastewater facilities in the metropolitan area are beginning to alleviate enrichment conditions.

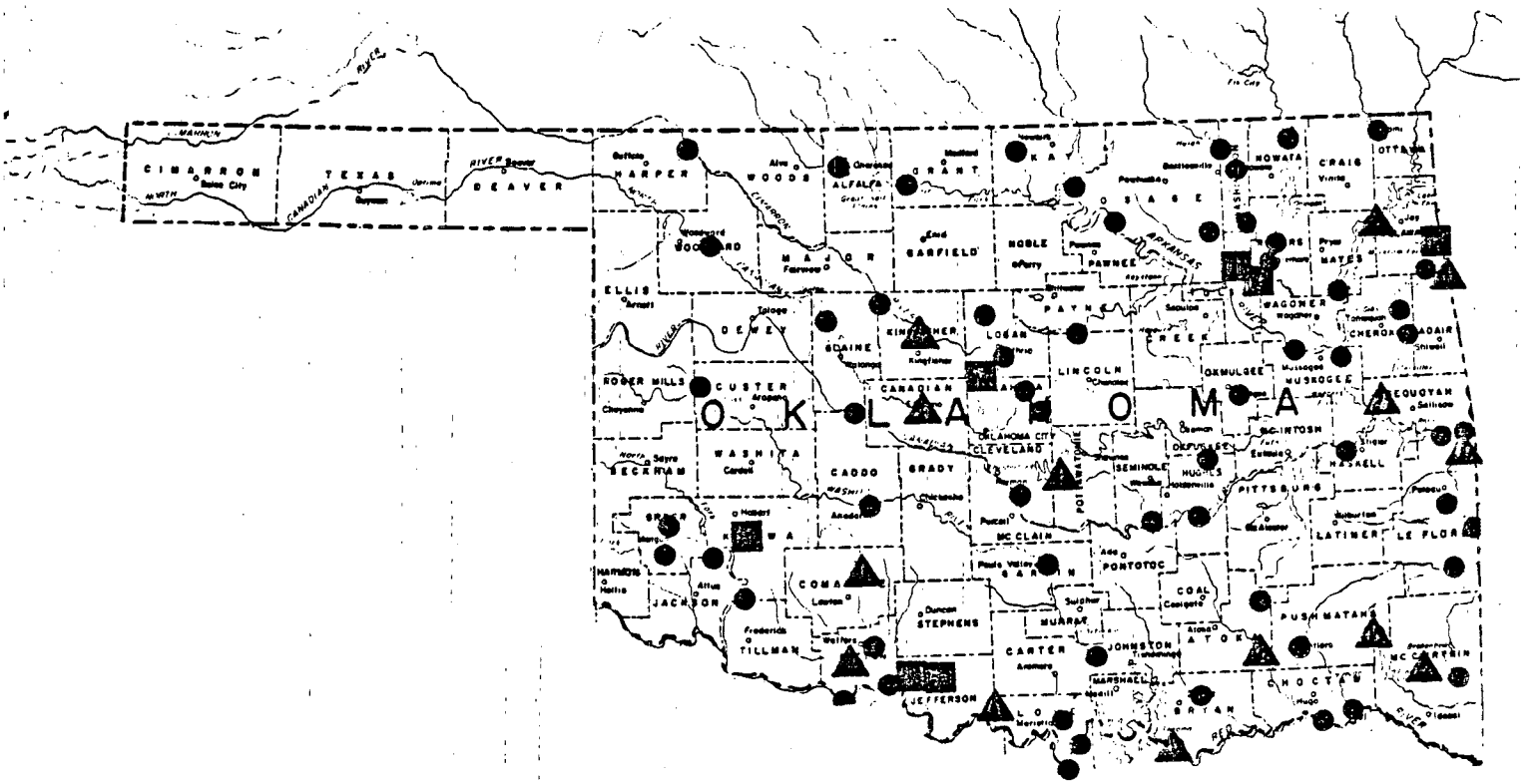


Figure 1

Dissolved Oxygen % Exceedence

● 0-9%

▲ 10-24%

■ ≥ 25%

(≥30 samples between 1978-1981)

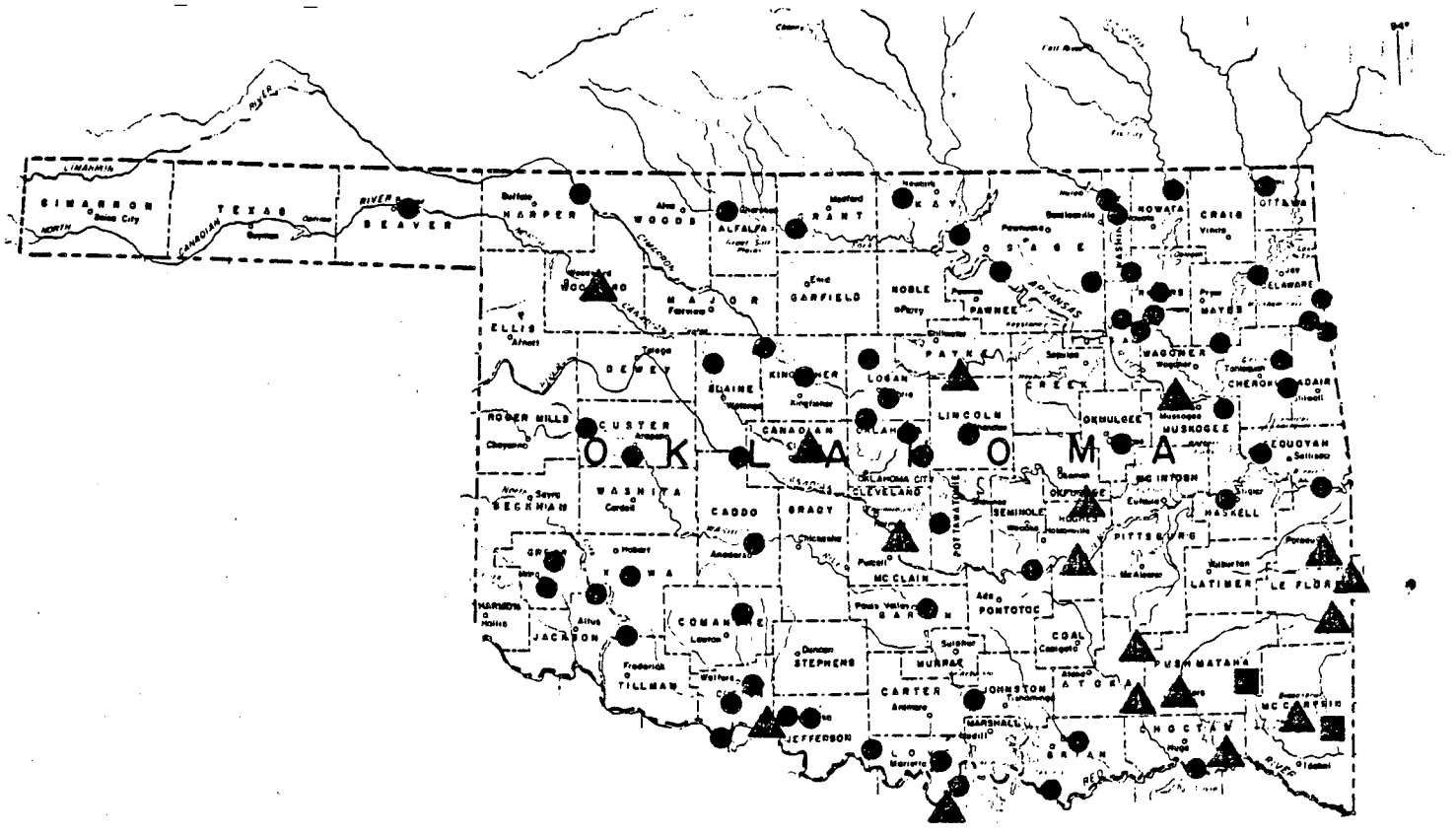


Figure 2

pH % Exceedence

● 0-9%

▲ 10-24%

■ ≥ 25%

(≥30 samples between 1978-1981)

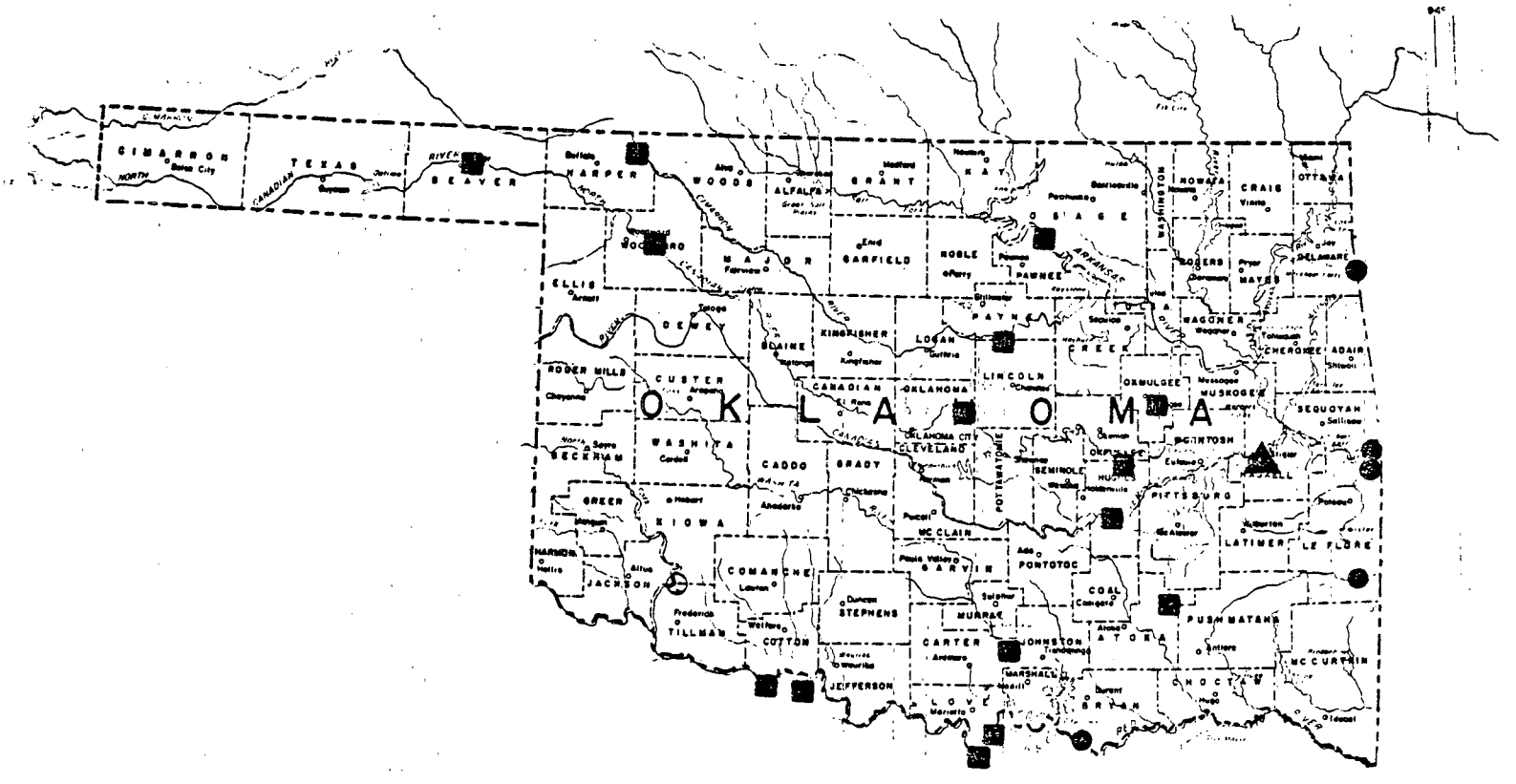


Figure 3

Coliform % Exceedence

● 0-9%

▲ 10-24%

■ ≥ 25%

(≥ 15 samples between 1978-1981)

The North Canadian River continues to be one of the most highly enriched tributaries in the Arkansas River basin. This river is the receiving stream for seventy-three municipal and thirty-three industrial point source discharges. Water quality degradation was particularly severe in the El Reno - Harrah segment. Numerous construction grants are currently underway to alleviate these degradation trends.

The Illinois River has shown continued degradation due to enrichment. Degraded aesthetics in this watershed have caused considerable public outcry. The State of Arkansas is now actively pursuring reducing enrichment contributions to the Illinois River in Oklahoma.

Toxic organic compounds were detected in the North Canadian River at Wetumka and Harrah, in the Arkansas River at Muskogee, Bird Creek at Catoosa, Chickaskia River near Blackwell, and in the Deep Fork near Wellston. Numerous toxic metals, of unknown origin, exceeded standards throughout the Arkansas River basin.

RED RIVER MAIN STEM AND TRIBUTARIES

The Red River in Oklahoma is enriched and mineralized thru naturally occurring salt deposits in the upper segment (state line to Lake Texoma) with improvement occurring in the lower segment (Denison Dam to state line). Degradation was also indicated below the Blue River and Muddy Boggy watersheds due to increased enrichment, but was not as severe as the problem evidenced in the upper Red River. The upper Red River is characterized by mineralization and elevated levels of metals, both toxic and non-toxic. While many of the observed concentrations of metals are most likely of background origin, temporal trends in the levels of nickel, chromium, cadmium, and selenium in the Red River indicate the possibilty of point source contribution. Significant increases in the concentrations of these metals have occurred in the past four water years, with cadmium and chromium showing increases below the North Fork watershed, and chromium, nickel, and selenium increasing below Beaver Creek. This condition, combined with increased total organic carbon levels below these drainages, may be indicative of an increase in man-made pollution.

The lower Red River is characterized by decreased mineralization, high levels of iron and manganese, and low levels of toxic metals. Lake Texoma acts as a nutrient and mineral sink, with the water below the dam exhibiting one of the best water qualities in the State. With exception of enrichment impacts below the Muddy Boggy, water qualilty shows stability over time and spatial improvement. The tributaries to the Red River showed either improvement or stable, fair conditions with the exception of the Beaver Creek Watershed.

PRINCIPAL BARRIERS

The sources of elevated pollutant levels found in many segments are unknown. Therefore, additional data collection is needed to determine the source or sources before an effective control program can be developed. The necessary data collection and evaluation process is costly and time consuming. In the case of nonpoint sources, the State has to develop new sampling and evaluation procedures. For industrial controls new modeling techniques are seen as key to effective controls. In the area of municipal sources the guidelines for modeling are subject to considerable interpretation and change.

It is not always feasible in Oklahoma to attain and maintain national water quality criteria. Dissolved Oxygen (D.O.) is low in some streams due to natural conditions. In other streams D.O. sags are caused by the discharge of oxygen demanding substances where there is little flow available for dilution and the reaeration rate is low. Many of these streams are impacted by publicly owned treatment works. Modeling in the State has shown that many of these streams cannot maintain a 5 mg/l D.O. standard without a level of treatment greater than secondary. In addition very few communities are willing or able to fund advanced wastewater treatment plants. Sufficient control of industrial effluents to meet Water Quality Standards (WQS) can mean control beyond BAT. In those instances, the State has indicated that an economic analysis of the cost of control and consideration of the water quality impacts is appropriate.

Beneficial uses designated by the 1979 WQS are not always compatible with existing or future beneficial uses. For example, many streams in Oklahoma are designated public and private water supply, yet the natural total dissolved solids in some of these streams will preclude their use as water supplies. Therefore, the beneficial use of water supply is not attainable, and it is not considered feasible to restrict discharges by protecting an unattainable beneficial use.

In Oklahoma several agencies are involved in controlling pollution sources. Because it is considered unfair to require stringent control by only one source, where many types of pollution sources contribute to a problem, close cooperation among the agencies is required to achieve equitable wasteload allocations for all dischargers.

IMPLICATIONS FOR AGENCY MANAGEMENT

WATER QUALITY

The State with Federal funding assistance is collecting and analyzing ambient, intensive, high flow and compliance stream data. The most recent program, about 3 years old, is the high flow or nonpoint source (NPS) monitoring program. Future implementation of NPS control activities will be built on the base established by this high flow monitoring effort.

Poor water quality in the North Canadian River is indicated by low dissolved oxygen levels and high fecal coliform levels. One overloaded wastewater treatment facility is being relieved and one is being abondoned due to the new Federally funded North Canadian wastewater treatment facility. This new treatment plant should considerably reduce the fecal coliform and dissolved oxygen problems in the North Canadian River.

Since 1956 over 1,154 construction grants totaling over $ 368,169,054 in Federal funds have been awarded in the state of Oklahoma. This includes 427 grants awarded under P.L. 84-660 and 727 grants awarded under P.L. 92-500. A further breakdown is as follows:

	Number of Grants	Amount Awarded
P.L. 84-660	427	$ 75,921,433
P.L. 92-500		
- Step 0 Delegation	5	$ 4,413,960
- Step 1 Planning	286	$ 10,331,944
- Step 2 Design	203	$ 11,406,716
- Step 3 Construction	204	$ 247,114,253
- Step 4 (2+3)	28	$ 18,730,748
- Step 5 Advance of Allowance	0	$ 0
- Step 6 WQM Planning	0	$ 0
- Step 9 State Training Center	1	$ 250,000
P.L. 92-500 Total	727	$ 292,247,621

To date the P.L. 84-660 projects have resulted in the construction of many treatment works including 338 treatment plants. Many of the P.L. 92-500 projects are still under way. As of October 1, 1982, the Step 3 and 2+3 grants have resulted in the completion of 122 treatment plants as well as other treatment works such as major interceptors, sludge handling facilities and lift stations.

NPDES PERMITS

The State has been working with EPA to receive delegation of the NPDES permit program and the 404 dredge and fill program. A tabulation of NPDES permits issued in the Region and in the State of Oklahoma is included in Table D.

COMPLIANCE

At the end of FY 82, the State's industrial NPDES permit compliance rate was 87% and the municipal NPDES permit compliance rate was 56%.

During FY 82 and the first quarter of FY 83 EPA issued 12 Administrative Orders to municipal NPDES permittees. The Oklahoma State Department of Health issued approximately 10 consent orders.

In addition to the Administrative Orders, EPA has initiated litigation with 1 municipality for a contempt of court action.

Six contract diagnostic inspections were performed in FY 82 of which all are being followed with enforcement action.

Data collection and analysis is also seen as key to successful implementation of controls for point sources. Section 208 money has been utilized by the State to perform municipal wasteload allocations and to investigate a dispersion based modeling approach for conservative pollutants typical in industrial dischargers.

EPA and Oklahoma have agreed that successful control of pollution will require greater State participation. In addition, through 208 grants, the State developed a feasible cost share program for best management practices. The successful implementation of these programs will depend on whether State funds will be made available. However through the Section 106 Grant and Construction Management Assistance Grants from EPA, the NPDES and 205(g) delegations are proceeding.

The State recognized several years ago that their WQS needed to be closely reviewed. Federal and State funding has made it possible for the State to review WQS on the basis of site specific problem assessments. The first major revision of the WQS resulting from these assessments should be completed in the late Spring of 1983.

The State statutory and regulatory basis for pollution control has received considerable attention in the last few years. Implementation of NPS controls, delegation of Federal programs and increased awareness of toxic problems all required a close scrutinty of existing strengths and weakness in the legal foundation of the State's water quality management program. The State reviewed their conservation district law and added portions to strengthen and clarify authorities with respect to nonpoint sources. Provision was made for a cost share program, although such a program has not yet been funded.

The Oklahoma Pollution Control Coordinating Act of 1968 was scheduled for sunset in 1982. The State reviewed the successes and failures of the ACT. The concept of a multi-agency board to coordinate multi-agency activities was found to be sound, although some shifts in composition of the board were recommended. The State is continuing to stress the need for coordination and to build vital data and communication linkages in order to promote an effective water quality management program in the State.

CONSTRUCTION GRANTS

The Oklahoma construction grant priority rating system has been revised to meet all the requirements of P.L. 97-117. The priority system ranking formula includes a segment ranking factor and effluent quality factor; these factors consider the relative quality of the receiving waters and the degree of noncompliance of the municipality.

Federal construction grants have assisted in the completion of several secondary wastewater treatment plants in the Tulsa area. Currently, the Tulsa Northside treatment facility is being upgraded and will allow abandonment of two treatment works which have been severely degrading water quality. The segments construction of this facility is expected to be completed by July, 1988 and should result in a significant improvement in water quality for Bird Creek, the Verdigris River, and ultimately, the Arkansas River.

PART I - OVERVIEW AND ENVIRONMENTAL STATUS AND TRENDS

INTRODUCTION - TEXAS

The Texas Department of Water Resources (TDWR), in cooperation with local governments, has established and is administering an extensive water quality management program as required by both State and Federal laws.

The State is divided into 23 inland and coastal basins for water quality management (WQM) and planning purposes. The basins are further divided into 311 designated stream and coastal segments comprising 16,115 stream miles. Of the 311 segments, the TDWR has determined that 242 segments are effluent limited, which is defined as currently meeting all applicable stream standards, or are projected to be consistently meeting standards following incorporation of secondary treatment (20 mg/l BOD_5 and 20 mg/l TSS as required by State rules) by municipalities and equivalent treatment levels by industries. The remaining 69 segments are considered to be water quality limited because they do not consistently meet applicable standards or because treatment levels more stringent than secondary (municipalities and best practicable treatment for industries are required to assure consistent achievement of stream standards.

The Texas Department of Water Resources maintains an ambient surface water monitoring program consisting of 576 ambient river and stream stations. Additionally, 1,140 river authority and municipal sites and 748 USGS sites are also included in the State monitoring network computer files. The EPA Basic Water Monitoring program is also conducted by the TDWR at 37 stations.

Texas has seven major estuaries and several smaller estuaries spread along about 400 miles of Gulf of Mexico coastline. The estuarine systems are generally characterized as drowned river mouths and are complimented by elongate barrier islands which enclose approximately 1.5 million acres of bay surface area and more than 1.1 million acres of adjacent marshes and tidal flats.

There are 173 major reservoirs in the State with 5,000 acre-feet or greater total capacity. The dependable firm water supply from these reservoirs is about 11 million acre-feet annually. Of the 11 million acre-feet of dependable annual surface water supply, 54 percent or 5.9 million acre-feet, is now being used to meet surface water supply and the annual water needs of the State.

In the past decade, the surface and groundwater of Texas have been subjected to increasing pressures from industrial, agricultural, and recreational endeavors. In addition to the steadily increasing population (11,198,000 in 1970 to 14,228,380 in 1980), demographic changes have contributed to changes in the demands for water resources and the needs for water quality maintenance. With no indications of changes in the demographic patterns, the population of the State is projected to increase to more than 21,000,000 by the year 2000.

TDWR is currently involved in two water pollution control permit programs. These programs include the State permit program and the National Pollutant Discharge Elimination System (NPDES) permit program administered by EPA. A tabulation of NPDES permits issued in the Region and the State of Texas is included in Table D.

WATER QUALITY

Even with population growth and demographic changes shifting the demands for waters resources, the overall quality of the State's water has improved or has been maintained at a relatively high level. In those areas of the State most affected by population shifts the standard metropolitan statistical area (SMSA), some very ambitious water management programs have been necessary to address the increasing demands for water supplies and the concomitant increases in wastewater flows. In some of these areas, comprehensive water quality management planning dedicated to improvement of water quality has succumbed to planning to maintain water quality and prevent degradation of existing quality. Improvements in water quality have occurred in some areas of the State and this improvement and maintenance of water quality is directly related to improved wastewater treatment programs by both municipalities and industries. These achievements in improving and maintaining water quality have been accompanied by significant economic growth activities that are water resource dependent.

Stream segments that are not meeting current stream standards solely from nonpoint source contributions have not been identified. However, indications of potential water quality problems resulting from nonpoint sources have been identified in several stream segments within the State. Erosion controls and an extensive soil conservation program established with the aid of the Texas State Soil and Water Conservation Board, the Agricultural Stabilization and Conservation Service, and the Soil Conservation Service have existed in Texas for approximately 40 years. Many of the activities coordinated through these agencies have secondary effects of protecting water quality. Some urban areas of the State have both structural and non-structural mechanisms to control urban runoff. Long-term site specific evaluations in areas and stream segments which have been determined to have the highest potential for water quality problems due to nonpoint sources are in progress.

Figures 1, 2, and 3 provide a graphic summary of the relationship between currently adopted surface Water Quality Standards and measured water quality at monitoring stations throughout the Region as it relates to dissolved oxygen, pH, and coliform bacteria. Figure 4 provides the status of fishable and swimmable stream segments within the State as of 1981.

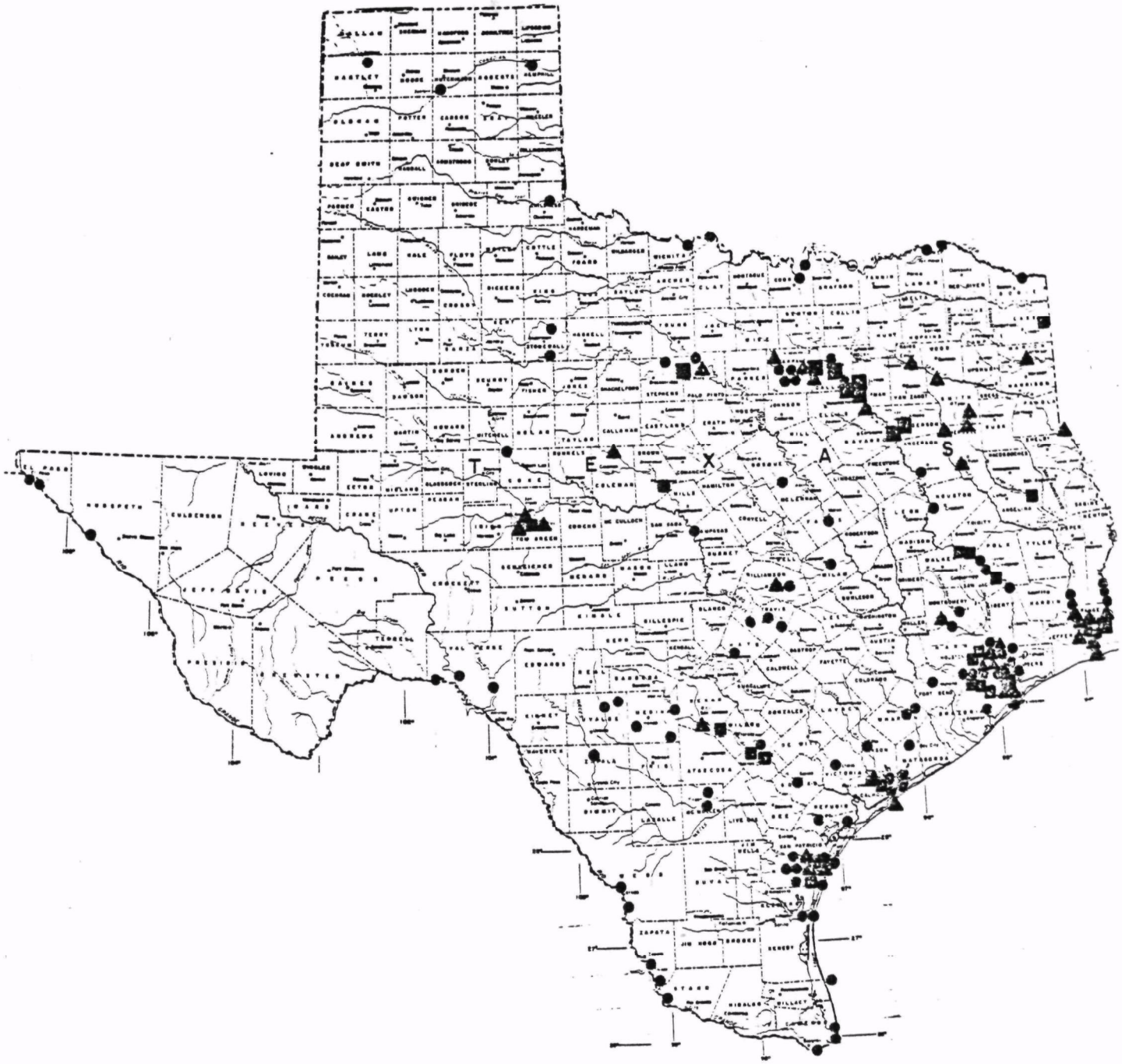


Figure 1
Dissolved Oxygen % Exceedence
● 0-9%
▲ 10-24%
■ ≥ 25%
(≥30 samples between 1978-1981)

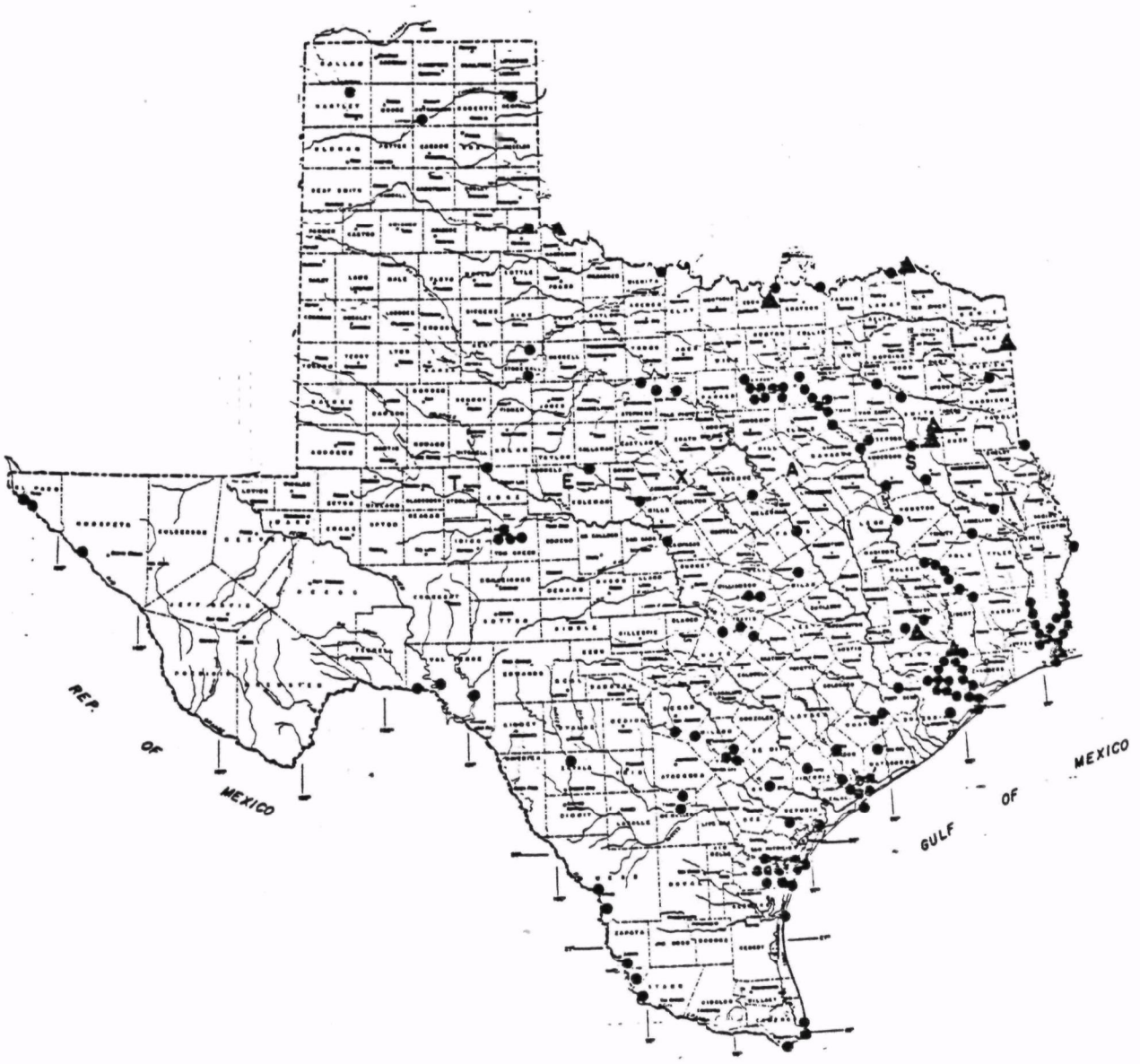


Figure 2

pH % Exceedence

● 0-9%

▲ 10-24%

■ ≥ 25%

(≥30 samples between 1978-1981)

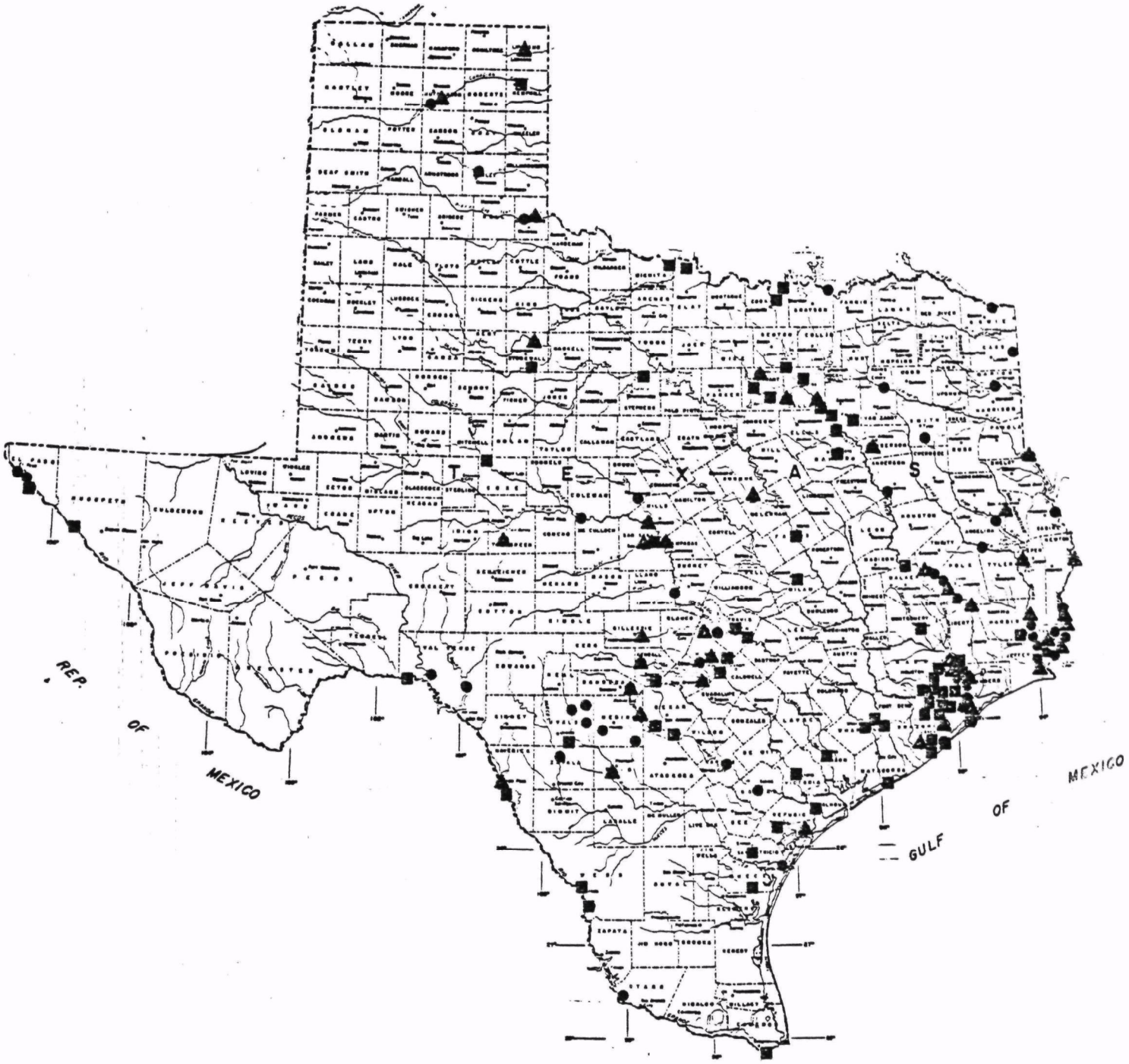
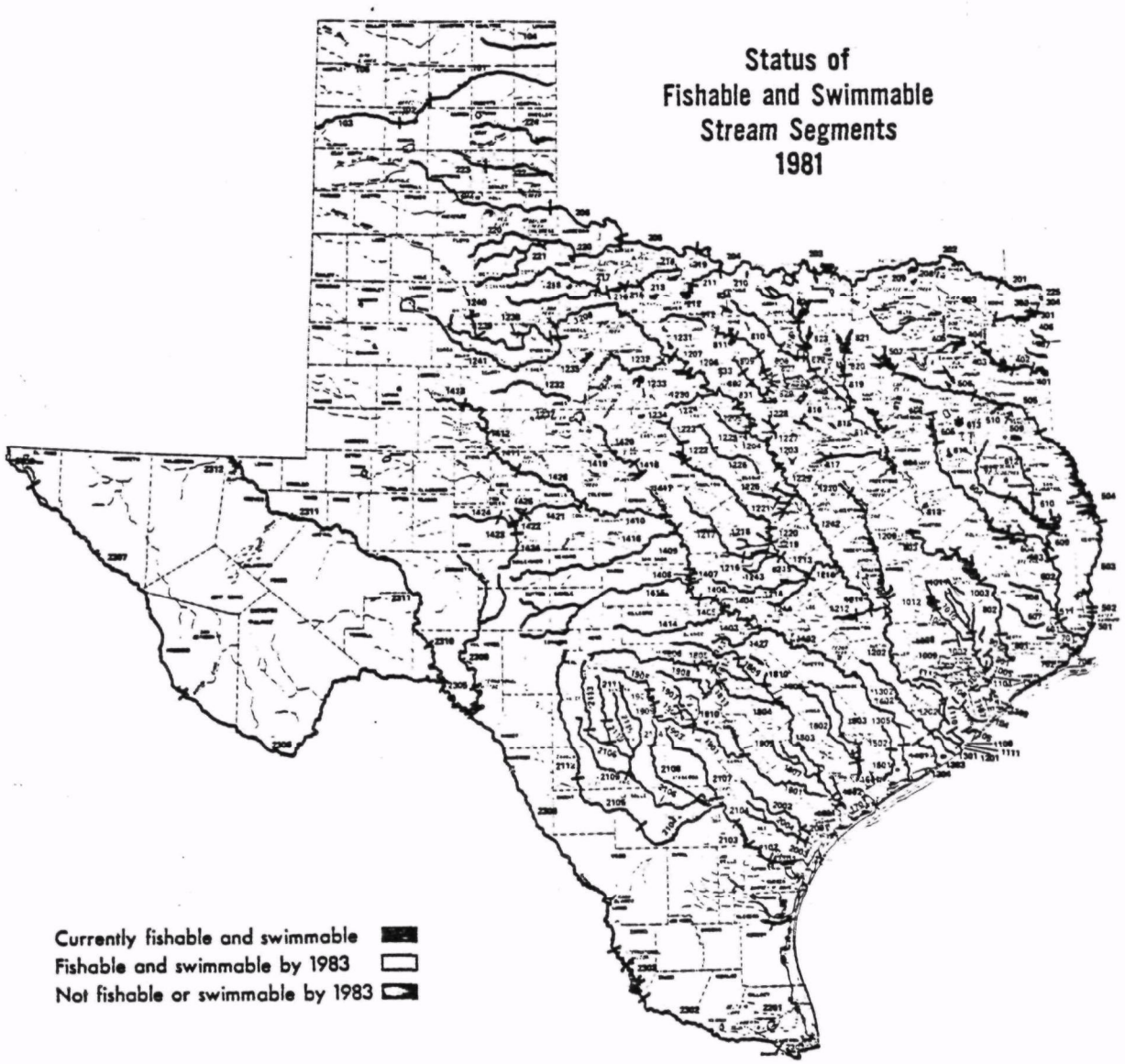


Figure 3
Coliform % Exceedence
● 0-9%
▲ 10-24%
■ ≥ 25%
(≥ 15 samples between 1978-1981)


Status of
Fishable and Swimmable
Stream Segments
1981
Currently fishable and swimmable
Fishable and swimmable by 1983
Not fishable or swimmable by 1983

PART II SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS

SIGNIFICANT PROBLEMS

The twenty-three inland and coastal basins in Texas vary in population density and growth rate, water quantity and quality, point and nonpoint sources. The major point sources of pollution are municipal treatment plants and industrial waste effluents. Also there are many streams or bayous within the State that are sluggish and have naturally low assimilative capacities.

Thirteen of the twenty-three basins have been characterized as having good water quality with minor, infrequent localized water quality problems. Of the remaining ten basins, the water quality problems which have been identified are localized, but of a more severe and chronic nature. However, in actual stream miles, the water quality problem areas represent approximately 20% of the total. Typical water quality problems noted are low dissolved oxygen, high and low pH levels, and elevated levels of chlorides, total dissolved solids, fecal coliform bacteria and nutrients. There are a few segments where pesticides and heavy metal concentrations have been measured which are higher than might be expected or desired, based on a comparison with national criteria or with other streams in the State.

PRINCIPAL BARRIERS

The high growth rates (population and industrialization) being experienced in Texas have increased the State's waste treatment needs significantly over the last 10 years. In order to maintain the existing Water Quality Standards and keep up with the growth, additional municipal wastewater treatment construction will be required. Expected future Federal appropriations will be significantly less than that needed to meet current needs. Failure to construct these needed facilities will result in the degradation of the State's major waterways. If municipalities cannot obtain sufficient local funding, maintenance of the existing water quality and attainment of future water quality goals will be severely restricted.

As mentioned above, increased growth in Texas is placing more demands on existing resources. Manpower ceilings have limited the State's ability to take on additional responsibilities and inflationary factors impact the State's ability to maintain the same level of activities performed in the past. If Federal WQM planning and pollution control funds are reduced significantly, this will affect the State's ability to maintain the current level of ambient and compliance monitoring, permit issuance, and enforcement actions.

IMPLICATIONS FOR AGENCY MANAGEMENT

WATER QUALITY

The TDWR is currently using the last of the Section 208 funds to revise wasteload allocations for approximately 60 stream segments and complete nonpoint source planning in priority areas throughout the State. The Section 205(j) funds are going to be used to support the water quality management planning program and evaluate Water Quality Standards for priority water bodies. The annual Section 106 grant represents about 35% of the water pollution control program implemented by the TDWR. This program includes supporting the construction grant management program, drafting NPDES permits, revising the State continuing planning process, ambient and compliance monitoring activities, enforcement activities, emergency response plan update, and the Water Quality Standards revision process.

In addition to performing activities in support of EPA national program priorities, TDWR carries out an extensive statewide program in response to State laws and priorities. The TDWR operates 14 field offices in the State that implement the compliance and ambient sampling programs. The TDWR was delegated the 205(g) (Construction Management Activities Grant) program in 1978 and have since assumed all delegable activities.

During FY 1983 there will be continued emphasis on the State's assumption of the NPDES program and maintenance of existing water quality management programs. Attention will continue to be placed on adequate planning in advance of all water quality decision making.

CONSTRUCTION GRANTS

The Texas construction grant priority ranking system has been revised to meet the requirements of P.L. 97-117. The priority system ranking formula includes factors for relative effluent quality, designated stream use, and segment ranking.

Low dissolved oxygen levels have been recorded in the Texarkana area. High biochemical oxygen demand levels have also been recorded from municipal point sources. To help alleviate such water quality conditions, construction grant funds are being directed toward a wastewater treatment plant with construction scheduled to begin during FY 83.

A high growth rate is being experienced in the Dallas-Fort Worth Metropolitan Area in both population and industrial growth. Significant efforts by local governments in cooperation with Federal and State agencies have been put forth to develop regional systems capable of providing wastewater treatment levels needed to improve and maintain water quality in the Trinity River. Some existing systems have reached or are nearing the designed treatment capacity. Construction grant funds have, and are being used primarily to upgrade and expand area wastewater treatment plants.

The rapid growth rate in the Houston area has caused overloading of area wastewater treatment plants. Improvements in the water quality of the Houston Ship Channel which was accomplished during the late 60s and during the 70's involved significant coordinated efforts by local, State and Federal agencies. Further enhancement and maintenance of water quality in spite of the rapid growth rate will require the continued and increased efforts on the part of all these agencies. After construction of the 69th Street/Northside treatment plants, the water quality conditions in the Houston Ship Channel should improve significantly.

During periods of low flow, the headwaters of the San Antonio River consist primarily of treated municipal wastewater. This condition results in a low dissolved oxygen level in the river. The flow in Cibolo Creek is also composed of domestic wastewater effluent and has been the site of algal growths and fish kills. Construction grant funding has provided for the planning, design, and construction of municipal wastewater treatment plants in the San Antonio area which should significantly improve water quality of both the San Antonio River and Cibolo Creek.

Measurements in the lower portion of the Neches River in the Beaumont-Port Arthur areas have shown that dissolved oxygen criteria are not consistently achieved. Factors contributing to low dissolved oxygen levels include industrial and municipal wastewater and on-going Federally funded upgrading of area municipal wastewater treatment plants is resulting in enchancement of water quality.

Since 1956 over 1,978 construction grants totaling over $ 1,469,016,276 in Federal funds have been awarded in the State of Texas. This includes 806 grants awarded under P.L. 84-660 and 1,172 grants awarded under P.L. 92-500. A further breakdown is as follows:

	Number of Grants	Amount Awarded
P.L. 84-660	806	$ 326,128,944
P.L. 92-500		
- Step 0 Delegation	5	$ 20,966,500
- Step 1 Planning	527	$ 46,395,244
- Step 2 Design	253	$ 50,934,079
- Step 3 Construction	282	$ 893,531,434
- Step 4 (2+3)	105	$ - 131,060,075
- Step 5 Advance of Allowance	0	$ 0
- Step 6 WQM Planning	0	$ 0
- Step 9 State Training Center	0	$ 0
P.L. 92-500 Total	1,172	$ 1,142,887,332

To date the P.L. 84-660 projects have resulted in the construction of many treatment works including 625 treatment plants. Many of the P.L. 92-500 projects are still under way. As of October 1, 1982, the Step 3 and 2+3 grants had resulted in the completion of 157 treatment plants as well as other treatment works such as major interceptors, sludge handling facilities and lift stations.

COMPLIANCE

Table C is a summary of State and EPA Enforcement Actions.

TABLE C ENFORCEMENT ACTIVITY FY 82

Type Action	Entity			
	State		Federal	
	Municipal	Industrial	Municipal	Industrial
Adm. Enf. Action (A.O. or Equivalent)			17	17
Initiate Referral to DOJ or State A.G.			1	3
Total			18	20

In FY 83, EPA began implementation of the Region 6 Municipal Enforcement Policy in Texas. The main features of the Regional Policy are negotiation of enforceable construction schedules for compliance by no later than July 1, 1988, with or without Federal grant assistance.

During FY 81, EPA Region 6 issued general permits that encompass approximately 1400 off-shore oil wells. Approximately 600 are in Texas coastal waters. The permits require permittee self-monitoring and annual reporting for drilling-related and domestic wastewater discharges. Region 6 has initiated the compliance tracking system for these permittees.

During the fourth quarter of FY 82, and continuing into FY 83, TDWR and EPA have directed the following enforcement efforts to bring about municipal compliance in the Lake Houston Watershed Area in order to reduce the excessive fecal coliform and turbidity levels:

EPA:
- Inspected 51 facilities to date.
- Scheduled 32 additional inspections through this spring into summer to cover all facilities in watershed.
- Warning letters sent and follow-up on all permittees delinquent on reporting effluent quality.
- Continuing to review compliance files of all NPDES permittees for enforcement actions. Have sent 16 enforcement letters to date.
- Held 11 enforcement conferences to date with Lake Houston permittees.
- Have issued four Administrative Orders to noncompliant permittees.
- Referring one publicly owned treatment facility (POTW) to the Department of Justice.
- Coordination with TDWR.

TDWR: - Reviewing self-reporting data for 165 permittees.
- TDWR field office will collect monthly samples from January to June 1983 at 6 stations in Lake Houston and 15 stations on Cypress, Spring, Peach and Caney Creeks and East and West Forks of the San Jacinto River (Fecal coliform and field water quality parameters measured at each Station. Also fecal coliform levels at interface of sediment and water at 6 stations.)
- Collected sample data from 33 POTWs up to five times each from October 7 through November 3, 1982. Total of 134 samples and 709 analyses made.
- Letters sent to all POTW's recommending special attention to O&M and sludge handling.
- Enforcement letters to two POTWs.
- Referred two POTWs to Attorney General for litigation.
- Continued ongoing litigation with four POTWs.
- Participated in three meetings in Houston to discuss strategy to control pollution.
- Sampling inspections of 24 additional dischargers since October/November survey.

EPA REGION 6 AGENCY CONCERNS

"SECOND-ROUND" NPDES PERMITTING

EPA Region 6, has begun "second-round" issuance of NPDES permits for industrial sources. The Region has five priorities for developing and issuing industrial discharge permits:

The first priority is given to facilities discharging to waters where use impairment problems have been identified and where there is adequate information to develop either a water quality-based permit or, in some cases, a permit relying on Best Professional Judgment (BPJ). The organic chemicals and plastics/synthetics industrial category, where major water quality problems have been identified, falls into this priority category.

The remaining permit issuance priorities are: (2) facilities for which applicable BAT effluent limitations guidelines have been promulgated; (3) facilities suspected of contributing to the impairment of a designated water use, but where insufficient information exists to confirm the extent of the use impairment; (4) facilities for which effluent limitations guidelines are not scheduled for promulgation and the existing permit limitations do not reflect sufficient treatment; and (5) facilities for which effluent limitations guidelines are not scheduled and the existing permit requires sufficient treatment.

In Region 6, dischargers in the Lower Mississippi River, the Houston Ship Channel, and the Neches and Sabine Rivers have been designated to be in the first priority water use impairment priority category. So, generally speaking, facilities discharging into these waterways can expect to have their permits reissued within the next year and a half. Facilities within the second priority BAT guidelines category can expect their reissued permits nine to twelve months after the promulgation date.

GENERAL PERMITTING

Region 6 has been investigating several areas for potential use of a general NPDES permit. The general permit program was designed to regulate categories of point sources located within a designated geographic area which discharge the same types of wastes and whose discharges warrant similar pollution control measures. The concept of issuing general permits thereby represents an important change from the original NPDES regulations, since prior to this only individual permits could be issued to point sources.

Under the general permit approach, a single NPDES permit can be written with limitations and conditions applicable to a defined category of dischargers. Individual permit applications are not required and this significantly reduces time in the processing and issuance of permits.

In order to issue general permits, the category of dischargers to be covered must involve the same or substantially similar types of operations, discharge the same type waste, require the same effluent limitations or operating conditions, require the same or similar monitoring, and be more appropriately controlled under a general permit than under individual permits. The general permit is written to cover a geographic area corresponding to existing geographic or political boundaries.

General permits may be issued, revoked and reissued, or terminated in accordance with applicable requirements of the NPDES permit program. In addition, special procedural provisions apply in the case of general permits. Any point source otherwise authorized to discharge under a general permit can be excluded from coverage under the general permit. Cases where an individual permit may be required include the following: (1) the discharge is a significant contributor of pollution; (2) the discharger is not in compliance with the conditions of the general NPDES permit; and (3) effluent limitations guidelines, conditions or other standards have changed so that the source no longer qualifies for coverage under a general permit. Any interested person may petition the director to require a source covered under a general permit to apply for an individual permit.

Where an individual permit is subsequently issued, the applicability of the general permit to that source is automatically terminated on the effective date of the individual permit. Similarly, a source excluded from a general permit solely because it already has an individual permit may request that the individual permit be revoked and that it be covered by the general permit. Upon revocation of the individual permit, the general permit applies.

In many instances, general permits can result in increased environmental protection because categories of dischargers which EPA and States previously had no time or resources to permit can now be covered by general permits. In addition, the provisions for general permits allow the permitting authority to address the cumulative impacts of numerous point sources operating in the same geographic area.

Table D lists the number of NPDES Permits issued as of March 4, 1983.

TABLE D: NPDES PERMITS ISSUED

		AR	LA	NM	OK	TX	SUB TOTAL	TOTAL
MUNICIPAL	MAJOR	54	69	14	52	175	364	1938
	MINOR	210	216	39	333	776	1574	
NON-MUNICIPAL	MAJOR	46	142	16	38	219	461	4748
	MINOR	361	1461	131	343	1991	4287	
TOTAL	MAJOR	100	211	30	90	394	825	6686
	MINOR	571	1677	170	676	2767	5861	

The above numbers are for issued permits only. Approximately 1400 of the minor facilities shown in Texas and Louisiana are offshore oil and gas facilities. Besides the above permitted facilities, there are a number of facilities which have submitted applicatons, but have not been issued permits. By state, the total number of applications is Arkansas-212, Louisiana-1998, New Mexico-99, Oklahoma-236, and Texas-2021 for a total of 4566. Approximately 1800 of these applications are for onshore oil and gas facilities.

DRINKING WATER

Table of Contents

PART I - OVERVIEW OF ENVIRONMENTAL STATUS AND TRENDS

In the five Region 6 States there are 15,649 public water systems. Of these, 8,011 are community water systems which serve a resident population of approximately 23,800,000 people and 7,638 are non-community systems which serve an equally large but variable population classed as the traveling public. As indicated in Figure 1, the majority of the water systems have groundwater as the major source of supply. However, from a population perspective, the larger community water systems serving almost two thirds of the resident population use surface water sources. Figure 2 documents the number of small and very small systems and the larger amounts of population served by the larger systems.

Under the Safe Drinking Water Act, EPA developed water quality limits (MCLs) and monitoring and reporting (M/R) requirements for all public water supplies. In Region 6 these requirements are effectively administered by the delegated primacy programs in each State. These State programs provide to EPA a yearly status report on their public water systems. Regional analyses of this data have been used by the States as a guide for future program activities, to set priorities, and to document trends of improved compliance with National Standards. These analyses have shown positive compliance trends in both water quality and monitoring and have documented the need for continued surveillance activities to maintain compliance levels. Because of the stable population and the full application of regulatory control, the priority systems are the community type.

The sources of drinking water, either groundwater or surface water, have had to coexist with our expanding population and developing technology. Although there have been but a few instances of toxic contamination found in Region 6 water supply sources, the trends of development have created a greater threat to both the groundwater and surface water. Thus, further activities are being promoted to coordinate the activities of environmental programs, especially within the water media, to monitor and plan for water supply source protection.

PART II - SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS FOR AGENCY MANAGEMENT

A) Drinking Water Supply Compliance

An analysis of compliance information is made each year from the violation data included in the States' Annual Reports. Table 1 summarizes the number of public water systems that had water quality or monitoring violations in FY 81. The majority of the bacteriological and turbidity violations occur in small public water systems (i.e. those serving less than 3,300). Therefore, the majority of the public is served by water systems which meet drinking water regulations. Table 2 indicates that the number of priority problem systems with persistant violations. Fortunately, these violations are a relatively manageable amount of small and very small systems.

FIGURE 1

PUBLIC WATER SUPPLY IN REGION 6

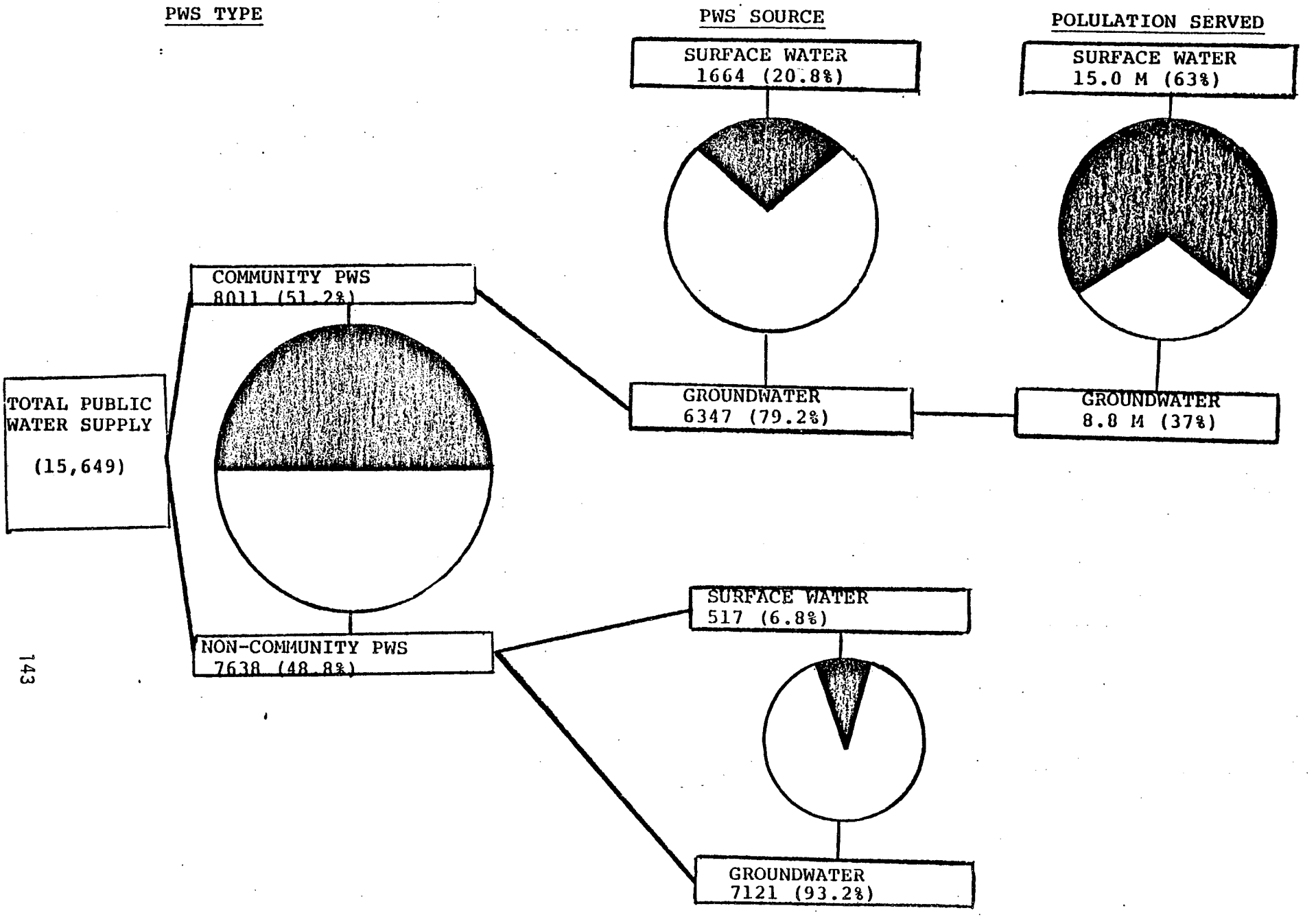
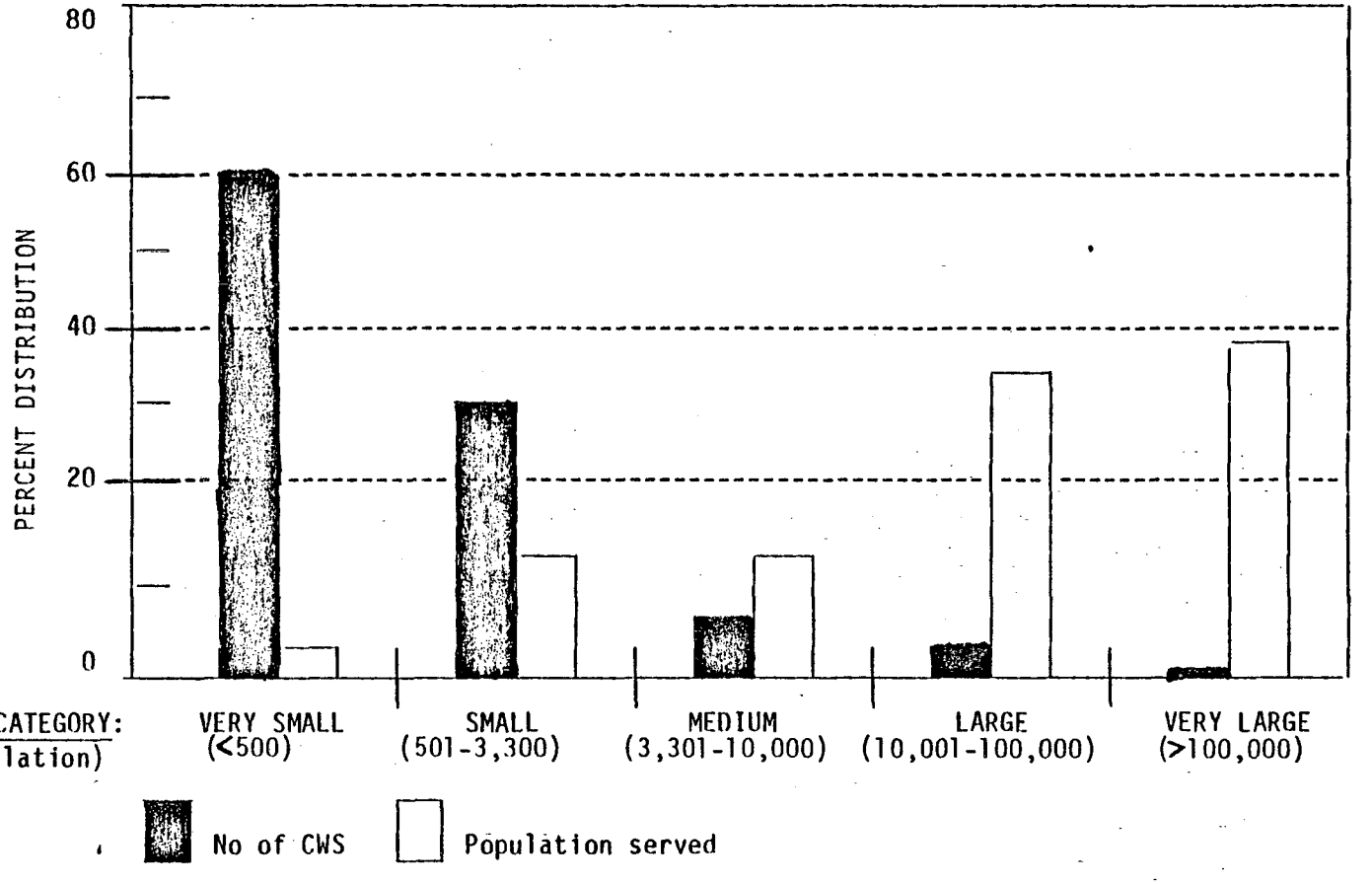


FIGURE 2

SIZE DISTRIBUTION OF COMMUNITY WATER SUPPLY SYSTEMS IN REGION VI



NO OF CWS'S:	4,824	2,335	516	306	30	8.011 (Total)
% POPULATION SERVED:	3.4%	13.5%	12.2%	32.3%	38.7%	

TABLE 1

PWS Violation - FY 81 - Region 6

State	Bact. CWS	Bact. MCL	Bact. M/R	Turb. (CWS Surf)	Turb. MCL	Turb. M/R	Chem/Rad MCL
Arkansas	(654)	49	84	(165)	1	6	1
Louisiana	(1234)	100	39	(101)	0	0	12
New Mexico	(620)	50	228	(34)	5	3	62
Oklahoma	(1133)	166	501	(574)	2	71	37
Texas	(4370)	234	1256	(790)	24	65	371
Totals	(8011)	599	2108	(1664)	32	145	483

Abbreviations

PWS- Public Water System
CWS- Community Water System
Bact.- Bacteriological
Turb.- Turbidity
MCL- Maximum Contaminant Level
M/R- Monitoring/ Reporting
CWS Surf.- Community Systems using surface water
Chem/Rad- Chemical/ Radiochemical

TABLE 2

Persistant PWS Violators - FY 81

State(CWS)	Bact. MCL>2Q	Bact. M/R >4 Mo.	CWS Surf)	Turb. MCL>4 Mo.	Turb. M/R>4 Mo.
Arkansas (654)	7	20	(165)	0	0
Louisiana (1234)	3	0	(101)	0	0
New Mexico (620)	7	44	(34)	1	2
Oklahoma (1133)	41	137	(574)	0	69
Texas (4370)	33	390	(790)	9	22
Totals (8011)	91	591	(1664)	10	93

By developing lists of the specific persistant violators and targeting specific resources toward them, the State programs have been able to accomplish positive compliance improvements (See Figure 3). The percentage of community water systems in compliance with bacteriological and turbidity quality and turbidity monitoring has shown a progressive upward trends during the period of FY 79 through FY 82 and has reached the 90% plus level. (7,200 or more public water systems in Region 6 are in full compliance with a specific requirement.) At the level of present effort and resources, the State programs will do well to hold these compliance percentages. Bacteriological monitoring/reporting, has also shown progress over the last four years, however, in most States it still has room for further improvement. Bacteriological sampling is a self monitoring program in all States except Louisiana. The difficulties of coordination and operator motivation are evident in the low compliance levels.

The chemical violations for Region 6 community water systems indicates a clustering of violations in the States, particularly in Texas, New Mexico and Oklahoma. Most of the violations are the result of naturally occurring fluoride and nitrate levels in groundwater sources which have not been subjected to treatment for technical and economic reasons. The fluoride standard is currently undergoing review under the Revised Regulations process and may change the current compliance picture. The remaining chemical violators are being addressed on a case-by-case basis.

PRINCIPAL BARRIERS:

The principal barriers to bacteriological and turbidity compliance are operation and maintenance problems within the systems and a lack of committment on the part of many small system operators. These problems are addressed through operator training programs and technical assistance visits by State engineers to identify system deficiencies and stress the need for quality control. A newly developing barrier in many States is the need to reduce monitoring activities in response to budget cuts. This problem can be addressed by setting priorities within programs and judicious application of available resources.

The barriers to chemical quality problems are public acceptance, a limited health basis for the standard, the technology of treatment and costs to the system. The fluoride standard and many others are being addressed in the Revised Regulations process. Research activities must be designed to assist in this process. Special emphasis should be directed to improve the health effects data base and to investigate the technical and economic aspects of treatment of currently regulated constituents as well as the newly emerging priority toxic materials that are impacting our environment.

IMPLICATIONS FOR AGENCY MANAGEMENT:

The State and Regional programs must assess PWS compliance frequently and adjust program activities to meet priority problems. Specific activities including enforcement should address persistant violators so as to hold a high maintenance of effort level for bacteriological and turbidity quality and increase bacteriological M/R.

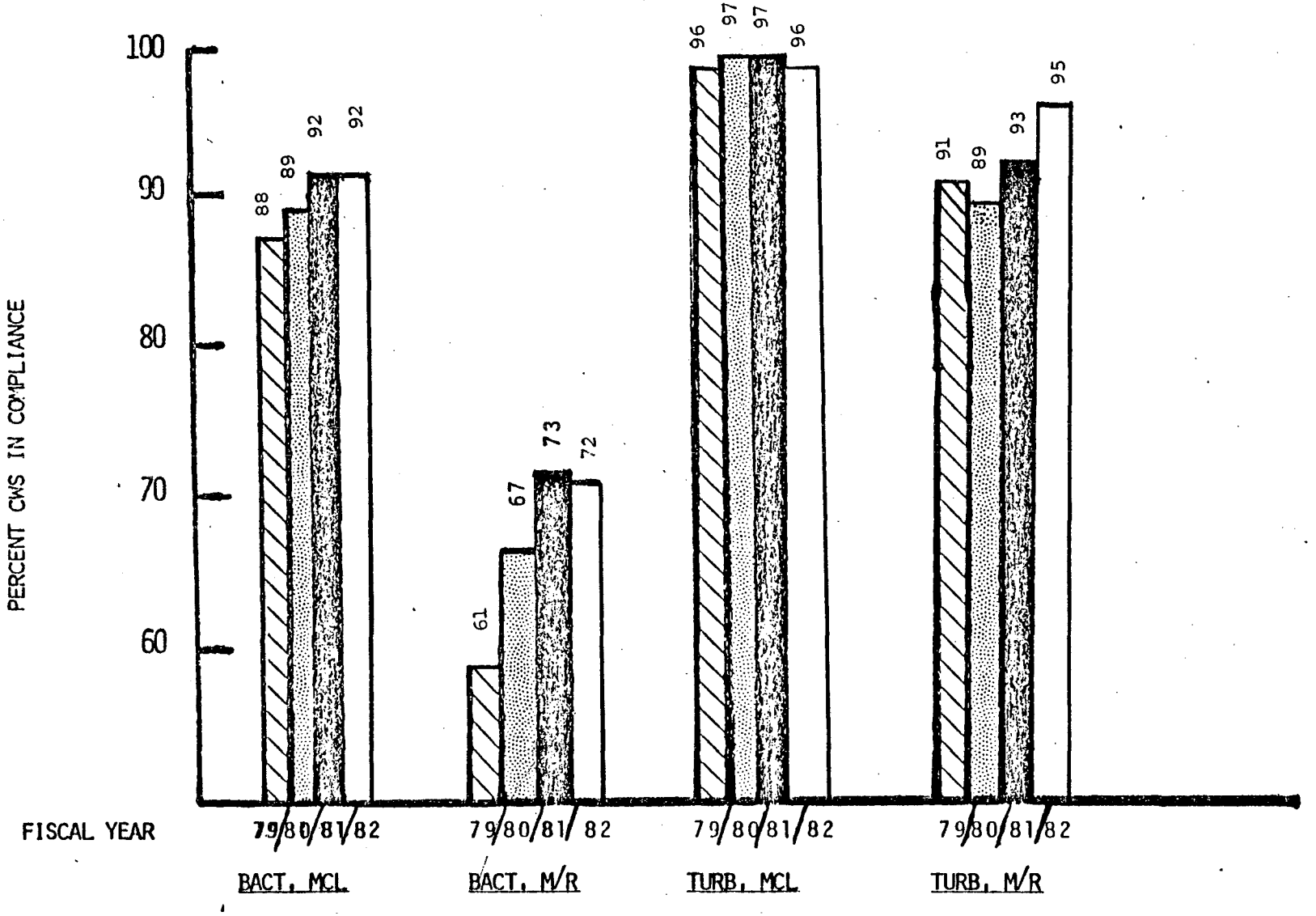


FIGURE 3. COMPLIANCE TRENDS, COMMUNITY WATER SYSTEMS

Chemical violators can be addressed through technical assistance and with the aid of an enforcement priority system which ranks actions by need.

EPA, Region 6, pioneered and developed a compliance analysis system for managing environmental results in the drinking water program. Through the accumulation of State drinking water monitoring information and the analysis and presentation of the data in a series of tables, lists, and maps, Regional personnel have worked closely with State officials to pinpoint problem areas, define trends, establish priorities, and develop plans/strategies for action. The system has further been extended to evaluate results and chart water system progress in the Region.

New Mexico has further expanded the EPA compliance system and adapted it to each individual in their water system supervision program. They established PWS compliance goals for each field professional as part of their individual performance standards. This proved very effective, not only in upgrading drinking water quality, but also in improving water system compliance in all environmental areas.

To support State and Regional actions, EPA Headquarters is requested to: a) complete review of the fluoride standard in line with its own established timetable, b) strengthen health effects guidance on existing and new toxics, and c) review required monitoring frequencies and apply appropriate changes.

B) Protection of Drinking Water Sources

Drinking Water System sources of supply in Region 6 are being threatened by the wastes generated in conjunction with an expanding population growth in the Southwest. A number of incidents have occured in Region 6 which have emphasized the need for improved protection of our drinking water sources. Concerns for surface water quality in the Lower Mississippi River, Lake Houston, Beaver Lake, Lower Rio Grande River, Caddo Lake, and other water bodies have emphasized the need for continuous efforts to protect these sources for public water supplies. The discharge of unregulated compounds could present a real threat to the downstream water supply. These materials are not regulated because sufficient health effects, occurrence and treatment data are so lacking that water quality standards or effluent levels have not been established. A strong effort must be developed to generate this data so it can be included in the water quality management and control programs.

Groundwater, too, is subjected to potential degradation from hazardous waste sites, industrial pits, ponds, lagoons, landfills, injection wells, and a host of other activities in which waste materials are placed on or below ground level. Once a freshwater aquifer is contaminated it may never recover. In 1981, EPA conducted a National Groundwater Survey which was specifically looking for groundwater occurrence of volatile organic chemicals. A summary of the initial results from 127 public

water systems sampled in Region 6 is given in Table 3. The table lists the number of specific contaminant occurrences and the range of concentrations found. In each cases where a substance was measured, resampling was performed and follow-up actions were taken. In general, the contaminant levels were found to be very low and are not a problem based on current health-effects information. However, the fact that these volatile organics can be identified and measured in fresh groundwaters is a concern for the future. This would warrant continued monitoring to track the persistance of the substances and could prove invaluable if new health information requires action. (See the section on groundwater for detailed information on the Region's groundwaters.)

Whether the drinking source is groundwater or surface water, our expanding society has produced a high potential for contaminants by toxic chemicals.

PRINCIPAL BARRIERS:

The main barriers to improving the protection of drinking water sources are the needs for health effects and occurrence information. The lack of this data hampers the establishment of water quality criteria, effluent limits, drinking water standards, or any other regulations which could serve as a basis for protecting water sources. Coincidently, the lack of coordinated water source information resulting from time and resources constraints has impacted planning efforts and the provision of appropriate control strategies.

IMPLICATIONS FOR AGENCY MANAGEMENT:

The State and Regional programs must strive to accumulate the basic information, complete the appropriate planning, wasteload allocations, etc., and develop waste discharge controls that adequately protect all water uses. Regional and State leaders must continue the priority for this intermedia coordination effort.

EPA Headquarters support for the protection of water sources should be centered on developing necessary health-effects information, and supporting regional priority actions with resources and appropriate policy/guidance materials.

TABLE 3

SUMMARY SHEET FOR GROUND WATER SUPPLY SURVEY

Occurrence and Levels (ppb)

	AR	LA	NM	OK	TX
benzene		1(15.0)			
1,2-Dichloropropane		1(0.22)			
Dichloroiodomethane		1(1.0)			
1,1,1-trichloroethane		1(0.22)			3(.23-1.2)
ethylbenzene		1(.74)			1(.87)
tetrachloroethylene				1(1.1)	2(1.4-2.5)
p-dichlorobenzene					1(.70)
carbon tetrachloride		2(.50,2.5)			5(.21-15.)
bromobenzene					2(.21,.74)
1,1-dichloroethylene					1(.24)
1,1-dichloroethane					2(.50, .95)
1,2-dichloroethane		1(.95)			
toluene		1(2.9)		2(1.5, 2.4)	2(.64-.73)
xylenes		2(.61,.91)			3(.24-.61)
trichloroethylene				1(5.6)	
cis/trans 1-2,dichloroethane				1(2.7)	

Example: 3(.23-1.2)

It occurred 3 times in this State and ranged from .23 to 1.2 ppb.

GROUNDWATER

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PART I - OVERVIEW OF STATUS AND TRENDS

For environmental management purposes we consider groundwater to be that water below the land surface, in a zone of saturation, which can be utilized as a source of drinking water or for other benefical uses. While the Agency does not have a qualitative definition of groundwater, the Underground Injection Control (UIC) program defines groundwater of less than 10,000 mg/l total dissolved solids as an "Underground Source of Drinking Water".

Groundwater is the water source for approximately 80 percent of the Region's public water systems. In addition, groundwater plays a major role in meeting the irrigation and industrial needs of the region. Figure 1 shows the location of the major aquifers (aquifers which contain a sufficient quantity of groundwater to supply a public water system) in Region 6. The map does not distinguish between the recharge zones and the sub-surface extent of the aquifers; therefore, the potential hazard posed by surface activities cannot be accurately assessed by superimposing surface activity locations on the aquifer map.

In general, the status of groundwater quality in Region 6 is very good. Since the beginning of the federal Drinking Water program, not a single public water supply system in the Region has been forced to close due to contaminated groundwater. This is not to imply that contamination incidents have not occurred in Region 6, as many private water wells have been affected by localized contamination incidents.

There is no consolidated source of data currently available at either the Federal or State levels to accurately assess the degree of groundwater contamination in the Region. All aquifers probably have been subjected to limited incidents of contamination, somewhere at sometime. The knowledge of the pollutants and the specific locations of contamination is fragmented and scattered throughout the files of many State and Federal agencies.

EPA Region 6 has ongoing groundwater protection efforts under several programs, as summarized below. Details of these programs are contained in other sections of this report.

1. The UIC program regulates subsurface injection of fluids, a practice which poses a major potential threat to groundwater if not properly conducted.

2. The hazardous waste management program under the Resource Conservation and Recovery Act (RCRA) regulates hazardous waste storage, treatment, and disposal activities in order to mitigate the threat such activities pose to groundwater quality.

3. The Superfund program provides response and remedial action to clean up uncontrolled hazardous waste sites which threaten groundwater.

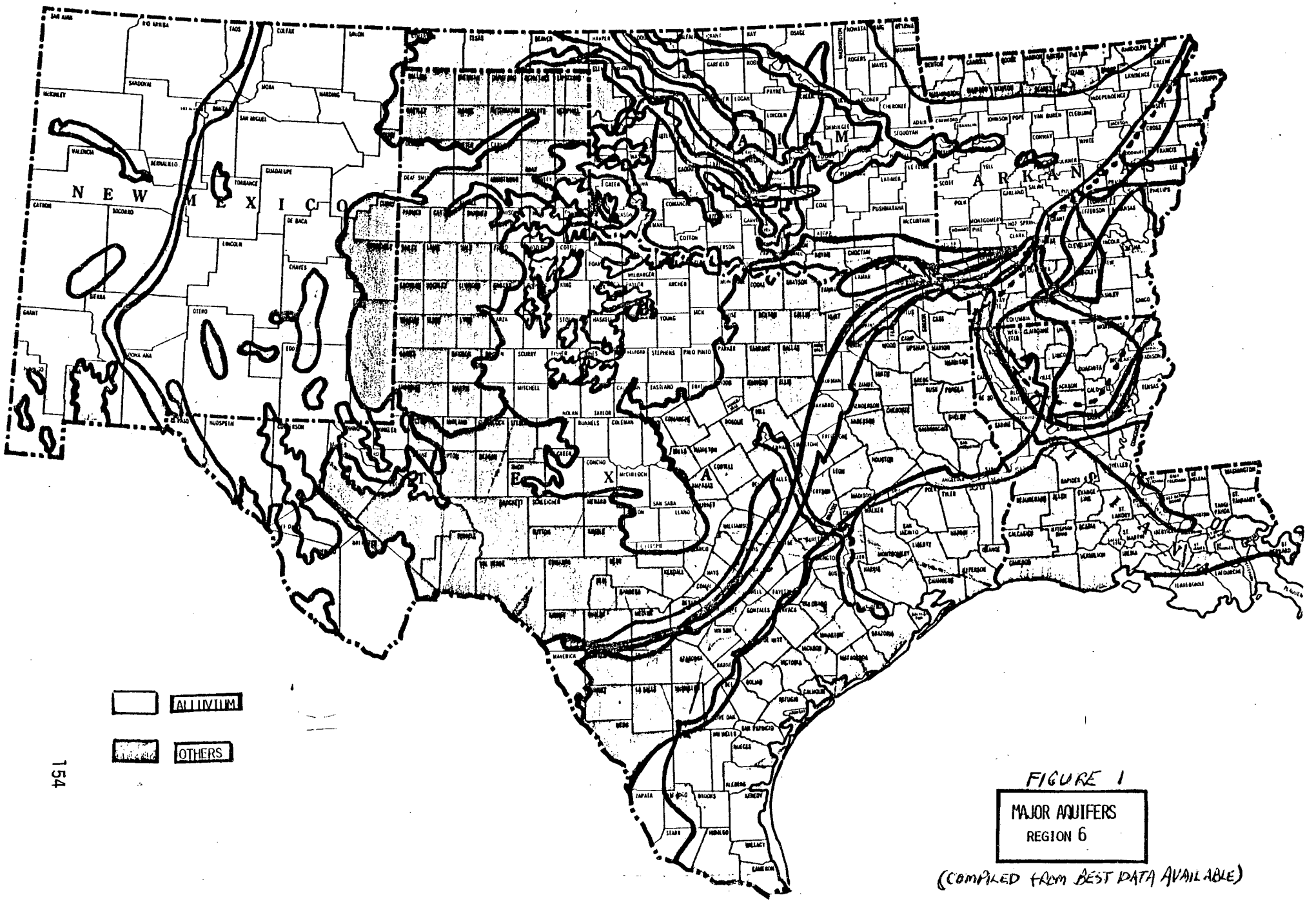

FIGURE 1

MAJOR AQUIFERS
REGION 6

(COMPILED FROM BEST DATA AVAILABLE)

4. The planning, permitting, and spill response aspects of the Water Quality program serve to lessen the potential for groundwater contamination from surface activities.

5. The Drinking Water program regulates the quality of "tap" water and serves as a partial guage of our success in protecting groundwater.

6. The Pesticides program regulates the distribution and use of pesticides, thus reducing the potential for groundwater contamination from improper application of pesticides.

In addition to the above ongoing programs, EPA can take action under several statutes to halt activities which are causing an imminent health hazard through contamination of groundwater.

PART II - SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS FOR AGENCY MANAGEMENT

(A) Types of Pollution in Region 6

The following are types of pollution known to have occurred in the Region. Where EPA has a directly applicable regulatory program, the EPA program which deals with the problem is referenced following each problem discussion. The Drinking Water and Superfund sections of this report also include discussions on groundwater as it relates to those programs. The New Mexico portion of the Water Quality section discusses groundwater quality in that State.

1. Injection well disposal

Approximately 87,000 injection wells are in operation in Region 6. They are primarially for disposal of:

(1) Brine produced in association with hydrocarbons

(2) Municipal and industrial wastes

EPA has authority under the Safe Drinking Water Act to control underground injection (see section on UIC Program).

2. Oil and gas exploration wells improperly completed or plugged

Exploration for and production of hydrocarbons occurs in every State of Region 6. These operations have caused brine pollution in many freshwater aquifers and wells throughout the Region. States have primary authority over this activity in Region 6.

3. Water wells which are uncased, unplugged, or water wells with leaky casing that penetrate strata with poor quality water

Some of the States require registration and licensing of all water well drillers in order to help control this problem. Some of the States also regulate the plugging of water wells which encounter poor quality water.

4. Recharge wells (high plains - unfiltered recharge wells)

There are a number of recharge wells or multi-purpose wells located on the high plains of Texas which put water into the Ogallala formation. Surface water is collected in playa lakes and the only filtering of water before recharging is to remove some of the silt load to prevent clogging of the wells. The movement of the recharge water and its effect on the groundwater quality has not been documented. EPA has regulatory authority under the Safe Drinking Water Act (see section on UIC Program).

5. Unlined brine pits; municipal and industrial waste surface disposal

Brines produced with oil and gas were historically disposed of through unlined saltwater pits. This practice has been reduced or stopped in most States, but contamination plumes continue to pollute freshwater aquifers and wells. Figure 2 shows numbers of surface impoundments, by category, in Region 6 compared with the national total. EPA has authority over some of these impoundments through the RCRA program.

6. Solid wastes

Municipal solid waste disposal sites, open dumps, and sanitary landfills often cause groundwater pollution. Historically, open dumps were situated in excavations (such as sand and gravel pits), flood plains, or other land of low economic value, allowing contamination of both surface and groundwater. Each State has the primary responsibility for this program.

7. Land application of wastes

Land application of feedlot wastes or municipal wastewater sludge has caused pollution of groundwater in areas where this practice has been extensive. The Region regulates some of these activities under the Clean Water Act.

8. Nitrate problems

(1) Cesspools or improperly designed septic systems. Few States regulate this problem, but some do make recommendations for proper design, and some local control districts do regulate construction. In some areas, soil type is not suited to septic treatment, but the practice is not prohibited.

(2) Fertilizers used in farming - We have no documented case of this happening; however there is widespread concern with the large amounts of fertilizer being used that groundwater pollution may be going on undetected.

(3) Feedlots (high plains) - Texas Tech through an EPA research grant completed a study on the infiltration rates and groundwater quality beneath cattle feedlots in the Texas high plains. They recommended that water-quality monitoring of wells in the vicinity of the feedlots be continued.

(4) Combination of the various sources - In many areas the nitrates are a result of more than just one of the above-cited causes. Several years ago in Runnels County, Texas, there were several cattle kill incidents and the investigation showed they died from nitrate poisoning, with nitrates running in the thousands of parts per million in the water. Nitrates were also found in large quantities in the animals' food.

9. Irrigation return flows

In some areas, groundwater salinity is increasing due to heavy irrigation with marginal quality water. Excessive application of water is practiced in order to prevent soil salinization.

10. Saltwater intrusion due to groundwater development

Enroachment of saline water has occurred in localized areas along the gulf coast and some inland areas. This type pollution occurs due to overdraft of fresh groundwater and its replacement by water of a more mineralized quality. Poor quality water can come from the fresh-saltwater interface or another stratum.

11. Deicing salt

Spreading of salt on roads, airport runways, and parking lots can cause pollution of groundwater in the northern part of the region.

12. Accidental spills of hazardous materials

Groundwater pollution may be caused by production and storage facilities, as well as transportation accidents. Region 6 has many refineries, chemical plants, etc., capable of causing these problems. EPA has authority under RCRA and Superfund for this type of activity.

13. Mining and mill tailings

The quality of water pumped (or flowing naturally) from mines has contaminated groundwater in many of the Region's mining areas. This is also true for mill tailings water which is a problem in mining areas.

14. Leaking storage tanks or pipelines

Storage tanks for petroleum or other materials can pollute groundwater if they leak. Some tanks and pipelines have been buried, making detection more difficult. The Region regulates some of these activities authority under the RCRA program and the Clean Water Act.

(B) Implications for Agency Management

(1) Implementation on EPA's Regulatory Programs

As is evident from the above listing, the types of activities which threaten groundwater vary considerably. Authorities to address such activities are fragmented at both the State and federal levels. However, Region 6 States have been quite active in managing their groundwater resources to ensure future availability. As examples, New Mexico has adopted groundwater quality standards and Arkansas is currently developing a groundwater strategy for the State.

Since the current quality of groundwater in Region 6 is good, the Region will concentrate on planning and prevention to avoid future problems. Such preventive measures will include effective coordinated implementation of EPA's regulatory programs which protect groundwater and assistance to States in their groundwater assessment and management activities.

(2) Assistance to States in Their Groundwater Efforts

The Region can assist States to do the following at their request:

(a) Assess groundwater resources

(b) Establish aquifer monitoring programs

(c) Locate and identify groundwater contamination

(d) Develop a groundwater strategy for the State

If it is desired that contamination data be collected and presented in future Environmental Management Reports, a great deal of additional time and resources are going to be needed since it would take a comprehensive and coordinated effort at both the Regional and State levels as well as cooperation among Federal agencies to assemble and portray groundwater data. If this becomes a future priority, then it would be essential for necessary resources to be made available to identify and document priority groundwater problems.

Elimination of groundwater pollution is dependent on prevention, not restoration after the contamination has been found. Problem identification will be used to correct the cause so as to prevent further contamination and to gain insights to preventing similar situations in other areas. Unlike most media, the list of specific groundwater contamination problems will grow over time instead of shrinking as the program identifies and documents more aquifer contamination. The measure of the program's success should not be the restoration of contaminated aquifers (in most cases, not cost effective), but problem identification and control of the pollution sources.

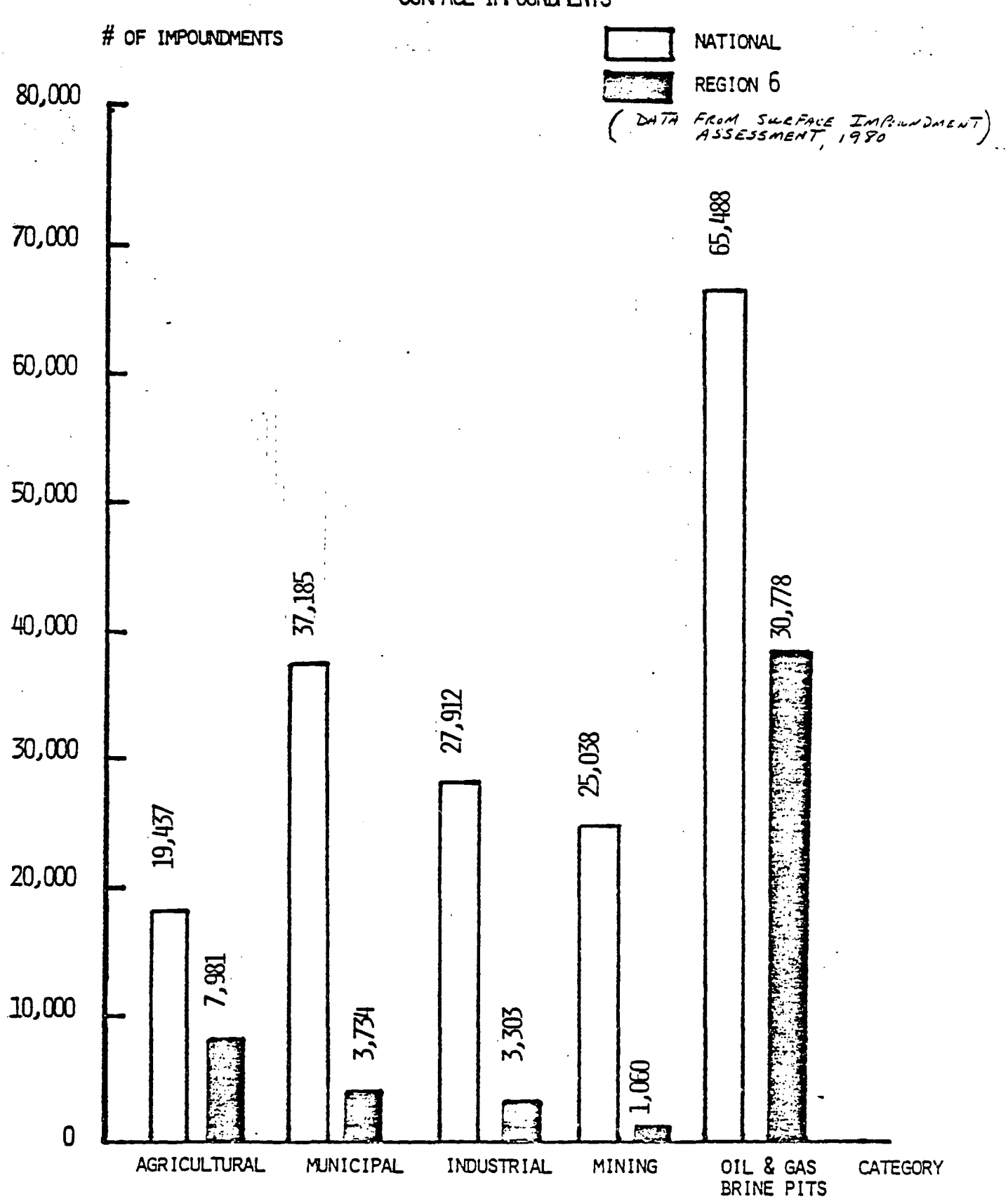
SURFACE IMPOUNDMENTS
OF IMPOUNDMENTS
NATIONAL
REGION 6
(DATA FROM SURFACE IMPOUNDMENT ASSESSMENT, 1980)
80,000
70,000
60,000
50,000
40,000
30,000
20,000
10,000
0
19,437
7,981
37,185
3,734
27,912
3,303
25,038
1,060
65,488
30,778
AGRICULTURAL
MUNICIPAL
INDUSTRIAL
MINING
OIL & GAS BRINE PITS
CATEGORY

FIGURE 2

UNDERGROUND INJECTION CONTROL

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PART I - OVERVIEW OF ENVIRONMENTAL STATUS AND TRENDS

The Safe Drinking Water Act requires that underground sources of drinking water be protected from endangerment by well injections. Figure 1 shows an ideally completed injection well. The Underground Injection Control (UIC) program regulations and guidance describe minimum requirements for achieving this protection. If a State's program meets these minimum requirements, the primacy of the UIC program is delegated to the State. EPA, Region 6, has delegated primacy of UIC programs to Texas, Louisiana, and Oklahoma, and partial primacy to Arkansas and New Mexico. Figure 2 shows the status of program delegations to the States and the number of Class I, II, and III injection wells in each of the Region's States. The figure also shows the percent of the national total, of each well class, that is in Region 6. Class I wells are those which inject hazardous, industrial, or municipal wastes; Class II wells are those used to inject fluids brought to the surface with oil or gas production (both disposal and enhanced recovery of oil or natural gas); and Class III wells are those which inject for extraction of minerals.

As can be seen from Figure 2, Region 6 contains the majority of the permitted injection wells in the nation. Thus, the Region has a greater potential for groundwater contamination from subsurface injection than any other part of the country, and the proper construction, operation, and abandonment of injection wells is of critical importance. Since 1983 will be the first full year of UIC program implementation for most Region 6 States, no comprehensive compliance or trend data is yet available.

PART II - SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS FOR AGENCY MANAGEMENT

(A) Nature of Contamination Incidents

While there have been isolated groundwater contamination incidents of which injection wells were the suspected cause, there have been no widespread, large-scale cases of groundwater contamination from injection well operation. This is primarily due to State regulation of underground injection prior to the federal UIC program.

(B) UIC Implementation Concerns

Although significant contamination problems are not known to exist, the Region is faced with several problems in implementaing the UIC implementation on Indian lands and in non-primacy States (if any exist in the Region). Indian lands contain over 4,000 Class II wells, approximately 75 Class III wells, and one Class I well. The Region must continue to hire and maintain quality staff persons, provide them with specialized training for UIC permitting, compliance, and enforcement work, and develop the data processing systems to efficiently run the program.

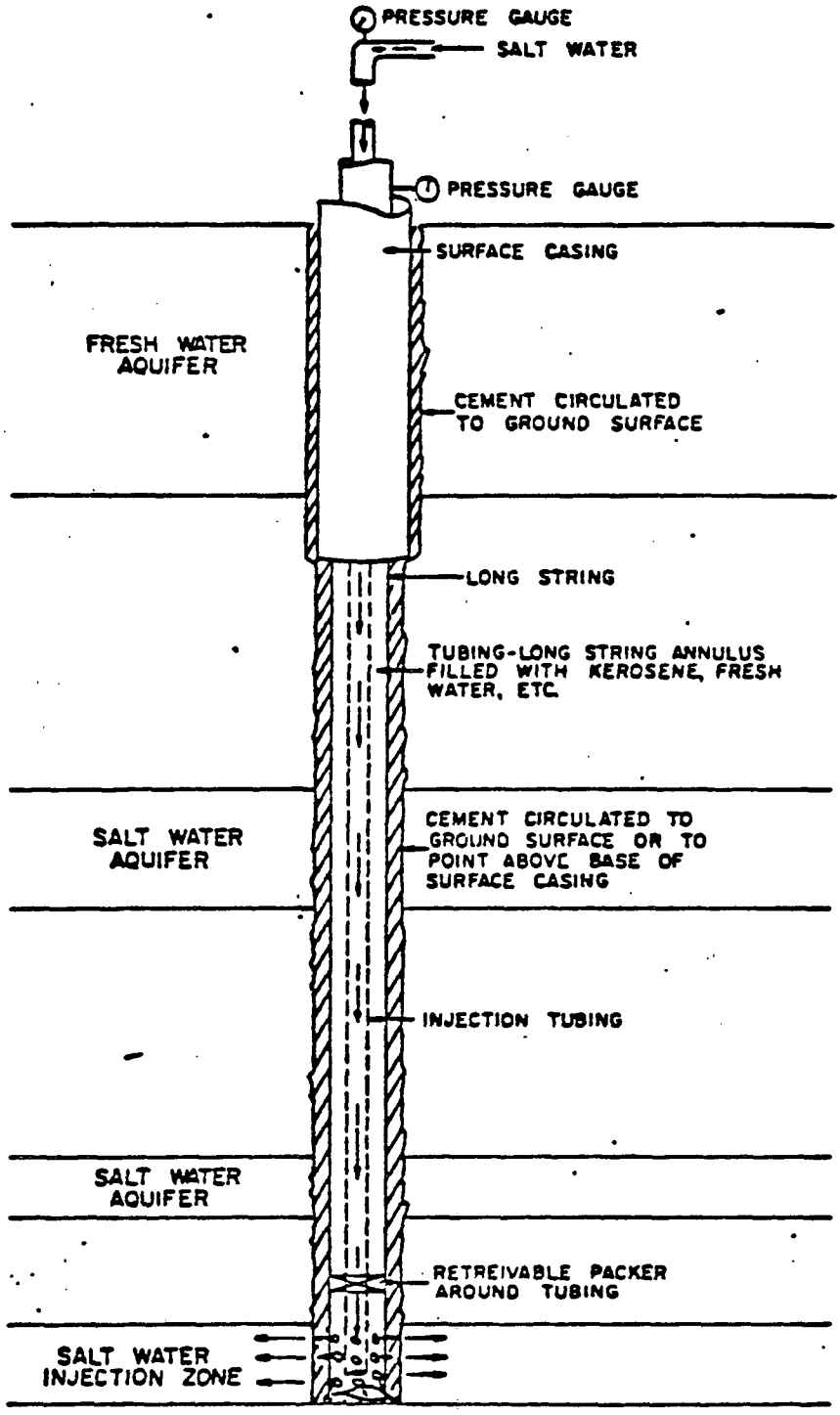

Figure 1

IDEALLY COMPLETED INJECTION WELL

(FROM INTERNAL EPA MEMORANDUM)

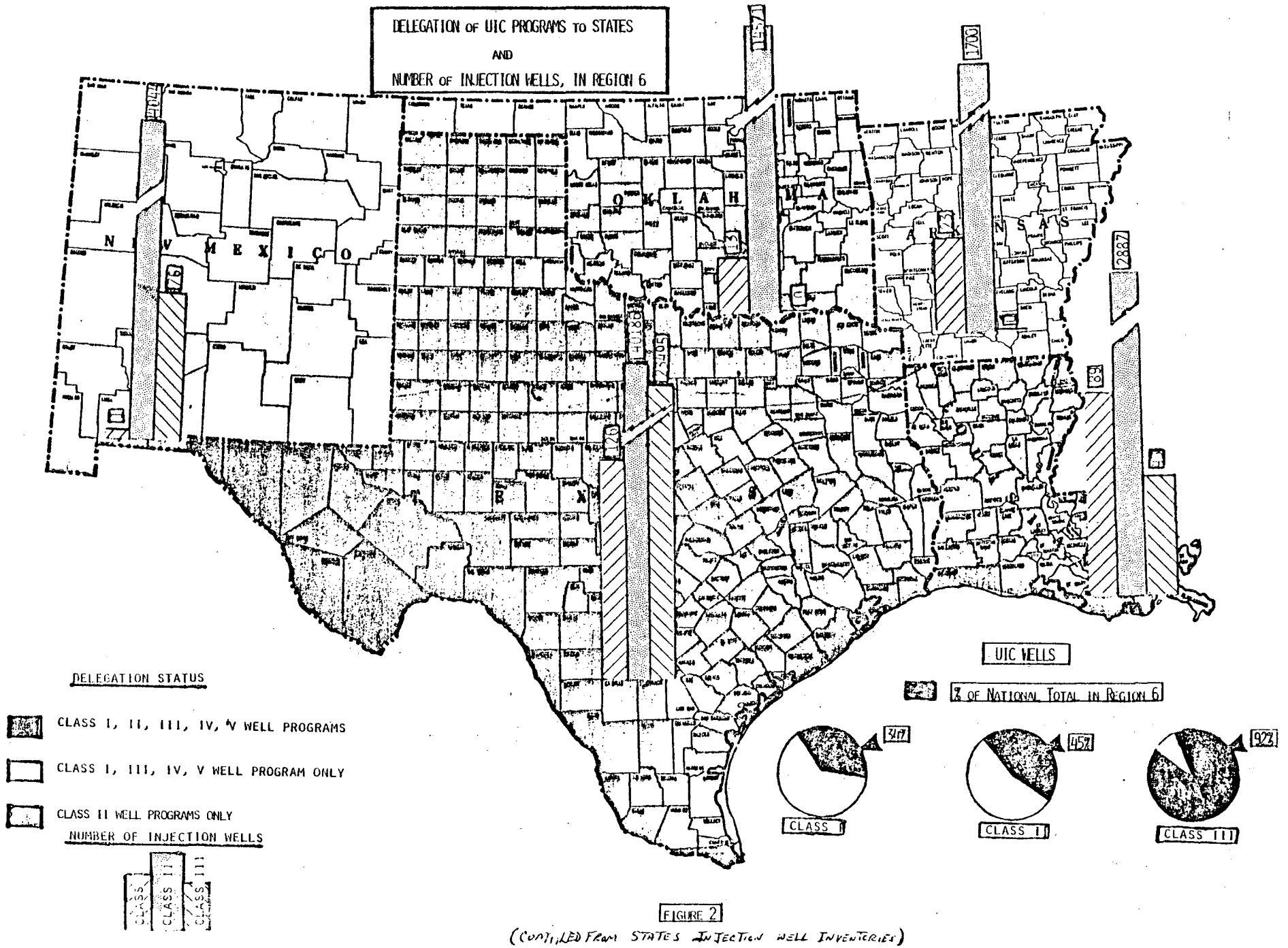

FIGURE 2

(COMPILED FROM STATES INJECTION WELL INVENTORIES)

In developing programs for Indian lands the Region will work with the tribes and States to arrive at UIC programs which satisfy the tribal governments' desires for environmental protection, promote consistent regulation of injection well operators on and off Indian land, and provide for efficient use of federal resources in running the program.

Another issue in UIC implementation is consistency in well testing throughout the Region. Region 6 will work with the States to adapt Agency quality assurance requirements and procedures to the as-yet "unexplored territory" of injection well testing.

A third issue is the degree of State program reporting to be required. Faced with decreased program resources and increased EPA reporting requirements, Region 6 States will be forced to decide whether to cut back ongoing permitting, compliance, and enforcement activities in order to fill out the lengthy EPA "report card." Region 6 will continue to work with the States and EPA Headquarters to arrive at a solution which is acceptable to all parties and most effectively serves the interest of environmental protection.

TOXICS

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PART I - OVERVIEW OF ENVIRONMENTAL STATUS AND TRENDS

PART II - SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS FOR AGENCY MANAGEMENT

PART I: OVERVIEW OF ENVIRONMENTAL STATUS AND TRENDS

The Toxic Substances Control Act (TSCA) was signed into law on October 11, 1976. This law is designed to fill the gaps between the other environmental and occupational laws and to enable the Federal Government to control unreasonable risks to human health and the environment caused by chemical substances.

Laws other than TSCA should be used when they will provide adequate protection to public health and the environment. EPA is also required to coordinate with other Federal Agencies if laws administered by these other agencies can provide the desired control (Sections 9 and 26 of TSCA). Thus, coordination is essential in order to ensure consistency of regulatory actions, efficient use of public and private resources and attention to the most significant hazards.

Therefore, the Region 6 staff prepared a strategy in an attempt to effectively use the various laws of EPA to prevent any unreasonable risk to public health or the environment.

ASBESTOS

The U.S. Environmental Protection Agency (EPA) published in the May 27, 1982, Federal Register a final regulation under the authority of Section 6 of the Toxic Substances Control Act (P.L. 94-469) concerning asbestos-containing materials in school buildings. This regulation requires all public and private elementary and secondary schools in the country to identify friable asbestos containing building materials, maintain records, and notify employees of the location of the friable asbestos-containing materials, provide custodial employees with instruction on reducing exposures to asbestos, and notify the school's parent-teacher association of the inspection results. The regulations do not require removal of the asbestos-containing material or the implementation of any other control measures.

Schools which have already conducted an asbestos inspection program and can document that they have no friable asbestos-containing material may be exempt from portions of the regulations.

The regulation requires schools to be "in compliance" by June 28, 1983.

On June 10, the EPA mailed the final regulation and "Asbestos Containing Material in School Buildings: A Guidance Document, Parts I and II" to all public and private schools in the nation. The Guidance Documents contain close up photographs of asbestos-containing materials and tips on where to find such materials in school buildings. Also, the guidance books provide details on how to inspect for and obtain samples of asbestos-containing materials.

ASBESTOS (Cont'd)

The Region is hampered in this effort by the fact that schools are not required to report to EPA the results of their inspections or whether corrective action has been taken. In most cases the states have some of this information or are in the process of developing it. Region 6 has contacted the states to request this information.

STATE INVOLVEMENT AND PROGRESS

Arkansas: The Arkansas State Plan for the Detection of Asbestos was adopted by the Arkansas State Board of Education on December 8, 1980. The asbestos program is being coordinated by the Department of Education with assistance from the State Health Department.

The State has reported a total of 37 school districts. Approximately 98 percent of the schools have been surveyed in Arkansas. Presently, 151 districts have shown no asbestos; whereas asbestos has been detected in 73 districts. Also, 59 districts have taken corrective action. The Department of Education updates the region on changes as they occur.

Louisiana: The Legislature of Louisiana passed an Act on July 6, 1981, to create a mechanism for the detection of friable asbestos materials. The Department of Education is coordinating all aspects of the program.

The State has reported that over 73 percent of their schools have been surveyed for asbestos. All of the public and catholic schools should be in compliance by June 28, 1983. The number of schools surveyed has increased over 30 percent since the State has managed the asbestos program.

New Mexico: The State of New Mexico submitted its Asbestos Detection and Control Plan to the Department of Education on December 15, 1980. The program is being managed by the Department of Education with assistance from the Environmental Improvement Division of the Occupational Safety and Health Bureau.

The Environmental Improvement Division has conducted workshops throughout the State for school officials. Regional records show that at this time 73 percent of the schools have been surveyed for asbestos.

Oklahoma: The State Department of Health is the lead Agency in the asbestos program. Senate Bill 67 was adopted by the State Legislature to provide funds for asbestos abatement actions within the state. The funds provided by this bill have been fully expended as of June 30, 1982.

STATE INVOLVEMENT AND PROGRESS (Cont'd)

There is an average of 625 public school districts in Oklahoma and the State has reported that they have all been assessed and that removal action has been completed from all but 6 districts. The State has reported that their program is more than 97% complete in the public sector. Oklahoma expects to complete corrective action in all public schools by June 28, 1983. The State is making progress on the private and parochial schools.

Texas: EPA is working with the Texas Department of Health and Texas Education Agency (State Lead Agency) to ensure that all school districts are in compliance with the regulation. The State Department of Health is performing analyses of bulk asbestos samples for school districts on request. However, many of the larger school districts are using commercial laboratories.

Our records show 62 percent of the schools have been surveyed for asbestos. This is a 15 percent increase since October of last year.

ASSISTANCE PROVIDED BY REGION 6

Region 6 sent follow-up letters to all of the large school districts in our 5 states to reenforce the requirements of the Asbestos rule and to offer assistance in training their personnel. Asbestos Workshops have been conducted for state/local school officials throughout the five state Region. On-site training for school inspections, sampling and exposure assessments have also been provided for local schools.

In Texas, Region 6 sent letters to all school districts in the State advising them of the requirements and offering assistance in complying with the rule. We also contacted Texas Education Service Centers and arranged to conduct workshops for school officials served by each Center. We have conducted 17 such workshops as of this date.

PCB ENFORCEMENT STRATEGY

TSCA, specifically required the Administrator of EPA to promulgate rules for the regulation of PCBs. A disposal and marking rule became effective April 17, 1978, and a broader rule became effective July 2, 1979. Our enforcement strategy is designed to enforce these rules in an effective and efficient manner.

PCB ENFORCEMENT STRATEGY (Cont'd)

The Region 6 PCB enforcement strategy was developed in accordance with the national enforcement strategy. The objective is to reduce the risk of spills while PCBs are in service and ensure that PCBs are properly disposed of when they are removed from service. This will be accomplished by inspections of facilities in industry groups that have been identified as having the largest quantities of PCBs and obtaining corrective action when violations of the regulations are found.

Unfortunately, there are no available lists of facilities that actually have PCBS. The potential universe of facilities to be inspected includes all commercial facilities that distribute and/or use electrical power and users of hydraulic and heat exchange systems. Headquarters has developed an inspection strategy based on a contract study of the distribution of transformers and capacitors in various industry categories.

The National Inspection Strategy allocates a certain percentage of the inspection resource to 12 different industry categories. Region 6 used these 12 categories, but modified the Complaints, Crisis, and Special Situations category to specifically include follow-up inspections. In addition, we added a Federal Facilities category and targeted inspections for several PCB approved disposal facilities.

II - SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS FOR AGENCY MANAGEMENT

TOXIC SUBSTANCES PROBLEMS

Generally, toxic substances problems that are specific to one media will be discussed under the particular media; i.e., air, water quality, drinking water, etc. This section focuses on those problems that are of a multimedia nature for which the Integrated strategy was developed.

After completing the Regional Integrated Strategy, the Toxics staff reviewed data on all chemicals produced or processed in Region 6 in significant quantities and selected six categories of chemicals as regional priority chemicals. The staff based the selection of these chemicals on the magnitude of production, the known multimedia environmental problems (based on available monitoring data), toxicity and existing controls. The chemicals selected in priority order are as follows:

lead
cadmium
brominated compounds
benzene and derivaties
phenols
butadiene and derivatiess

TOXIC SUBSTANCES PROBLEMS (Cont'd)

Lead and cadmium were selected as the two top priority regional chemicals because of the vast amount of data which showed widespread environmental contamination and exposure of children residing in contaminated areas. Further, according to the Center for Disease Control (CDC), during fiscal year 1979 more than 32,500 children in the United States showed symptoms of lead toxicity, compared to 25,800 during fiscal 1978. The CDC stated that an improved screening program accounted for some of the increase but also estimated that 1 percent of America's children between the ages of one and five suffer from excess lead absorption.

We focused our attention on soil and dust as sources of the lead. A recent exposure model had identified soil as a major contributor to urban childhood exposures. Also, none of the existing media programs addressed soil as a major source of exposure for sensitive subgroups of the population (children and pregnant women).

A chemical work plan was prepared for more clearly identifying the magnitude and extent of lead and cadmium contamination in soil and dust in areas surrounding smelter activities.

Studies were conducted in Baton Rouge and Shreveport, Louisiana; Bartlesville and Oklahoma City, Oklahoma; and Dallas, Houston, and Frisco, Texas. The studies in Baton Rouge, Shreveport, Oklahoma City, Houston and Frisco were completed but did not show any significant elevation in lead/cadmium levels. However, the Dallas and Bartlesville studies did identify significant soil lead contamination.

Lead/Cadmium Soil Contamination in Dallas, Texas: The cadmium levels found throughout Dallas were not high enough to be of major concern. However, high levels of lead were detected in the Dallas Study. In response to these results the city of Dallas and a Task Force established by EPA conducted follow-up studies.

Presently, EPA is working with the city of Dallas and the Texas Air Control Board in an effort to remedy the lead contamination problem in Dallas.

Lead/Cadmium Soil Contamination in Bartlesville, Oklahoma: In epidemiological studies reported by Baker in 1977 and RTI in 1981, children in Bartlesville, Oklahoma were identified as having the highest mean blood cadmium and lead levels encountered in any of the other smelter towns included in the studies.

Because of the concern about the blood cadmium and lead levels identified in these epidemiological studies, Region 6 initiated efforts to identify the sources of exposure.

TOXIC SUBSTANCES PROBLEMS (Cont'd)

In March 1979, the Regional Office collected soil samples from 14 elementary schools in Bartlesville for analysis of heavy metals. Lead levels at Lincoln Elementary were elevated (Surface 1,705 ppm and Sub-surface 797ppm). Cadmium levels at Jane Phillips and Lincoln Elementary Schools were also elevated (Surface 68.7 ppm and Sub-surface 15.95 ppm at Jane Phillips; Surface 58.6 ppm and Sub-surface 27.4 ppm at Lincoln). In a 1980-81 study funded by Region 6 and conducted by the Oklahoma Health Department, soil lead/cadmium contamination in the same order of magnitude as found in schools were found in residential yards near the smelter.

As a result of the findings in these previous studies, Region 6 has briefed the Oklahoma State Health Department on the results and final decision in the Dallas Lead Study which addressed a similar environmental problem. The State Health Department, which has expressed a desire to take the lead in any follow-up activities in Bartlesville, will make a decision on how to address this situation.

SUPERFUND

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PART I - OVERVIEW OF ENVIRONMENTAL STATUS AND TRENDS

REGIONAL SETTING FOR SUPERFUND

An environmental trend that is present in Region 6, as well as many other areas in the Nation, is the discovery of abandoned hazardous waste sites that have the potential to impact not only the environment but the human population as well. Much of the hazardous waste that was produced in the past was disposed of improperly by today's standards. These improper disposal practices of the past were due to various factors: lack of knowledge of the hazards of the wastes, lack of regulation governing disposal, and large rural areas for "out of sight" dumping.

The improper disposal practices problem is compounded in Region 6 by hydrogeological, climatological, and industrial factors. These include the high groundwater table in Louisiana and southeast Texas, large interstate aquifers, semi-arid to nearly tropical climates, mining areas in Oklahoma and New Mexico, and the nation's largest petrochemical area in Louisiana and southeast Texas. All of these factors resulted in the problem of abandoned hazardous waste sites which are now being discovered due to increased Sun Belt urbanization and hazardous waste control technology.

Region 6 sites are quite diverse. A large portion of the sites are located in Southeast Texas (Houston/Harris County/ Galveston County). (See FIGURE 1.) Many of these sites have large quantities of petrochemical wastes, styrene tars, and heavy metal sludges in floodplains, near coastal estuaries, or in the immediate vicinity of groundwater and/or surface water with a variety of uses. This is contrasted with sites in the arid Oklahoma and New Mexico areas which are usually characterized by a smaller number of pollutants affecting a more limited water supply.

SUPERFUND STRATEGY

Background: The authority to establish the Superfund program was given to EPA through the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA). This act is commonly referred to as Superfund. This Act created a fund of $1.6 billion over 5 years to address at least 400 of the nation's worst sites which are listed on the National Priority List (NPL).

Screening of ERRIS Site Inventory: EPA, through the Office of Solid Waste and Emergency Response (OSWER), has developed a strategy for providing a Federal program to clean up inactive, uncontrolled hazardous waste sites. The OSWER program strategy for Superfund begins with completing initial site screening of potential problem sites. This process started with discovery of some 15,000 inactive hazardous waste sites nationwide, of which over 2,000 are in Region 6. These sites were identified to the States and EPA by mechanisms such as: notification required under CERCLA Section 103, investigation conducted in accordance with CERCLA Section 104(e) or other statutory authority, notification of a release as required by a permit, and incidental observation or preliminary screening of site inventory lists that were already in existence.

Of the 2,000 sites identified in Region 6 which are listed in the Emergency Remedial Response Information System (ERRIS), approximately 50 percent have been screened or have complete final disposition strategies (See FIGURE 8.) In keeping with the OSWER objective, Region 6 intends to assist the States in completing the preliminary screening of the remaining known abandoned hazardous waste sites in the Region by September 30, 1984. The process of addressing the remaining sites will be accelerated with grant money from the Resource Conservation and Recovery Act (RCRA) Section 3012. This will provide money to the States primarily to conduct preliminary assessments on ERRIS sites. If in the process of screening the remaining sites the States identify candidates for fund-financing, Region 6 will work with the States to nominate the sites for inclusion on the NPL at an update point. Region 6 expects to add a significant number of sites to the National Priority List as a result of Quarterly Updates and the RCRA 3012 grant program.

Development of National Priority List: The next element of the OSWER strategy deals with prioritizing major site problems and publishing the Superfund National Priority List (NPL). The primary responsibility for the nomination of sites and the scoring of the sites using the Hazard Ranking System rests with the States. In Region 6, sites are considered under the Superfund Program when the State has identified that the site requires some action but the State cannot address the site strictly with its own resources. The States in Region 6 have identified and ranked sites to be included on the NPL and thereby addressed under Superfund. The evolution of the NPL started in Region 6 in May, 1981 when regional staff began working with the States to identify and score potential sites.

In October, 1981, the Interim Priority List of 115 sites was released; 13 of those sites were in Region 6. In July, 1982, EPA released the Expanded Eligibility List which included 6 new sites in the Region.

With the cooperation of the States, Region 6 was the first in the Nation to successfully resolve all sites on the Interim and Expanded Eligibility Lists where fund-financed response was necessary.

Responsible party involvement or enforcement action evolved at the remaining seven sites on the lists. For these sites, the Region has worked with Headquarters and the parties to finalize one Administrative Order, one Consent Decree, and one civil suit. We have also prepared two unilateral Orders and continue to negotiate for action at three sites in New Mexico. Region 6 has also achieved voluntary private party clean-up at two nonlisted sites (Mission, Texas and GT Metals in Oklahoma).

Again in cooperation with the States, Region 6 placed 7 additional sites on the proposed National Priority List in December, 1982, resulting in 25 of the 418 sites being in Region 6. (One of the sites placed on the Interim List was rescored for the NPL, and due to new information, did not rank high enough for inclusion). The Regional NPL sites are mainly located near the heavily populated areas of the Region and have the potential to impact a significant portion of that population. (See FIGURE 1.)

Types of Action Under CERCLA: The Superfund Program has three main types of action that can be taken at a site: immediate removal, planned removal, and remedial action. Immediate and planned removals are taken at sites where some action must be taken immediately or very soon to reduce threat of a hazard to people or the environment. Both of these removals have a 6-month, $1 million dollar maximum on them and can be taken at listed or non-listed sites. The immediate removal site is usually thought of as needing emergency action, while a planned removal site may allow more time for assessing the problem, considering various options to provide the best remedy possible within the constraints of time and money. Neither action is expected to provide a final solution to the problem; however, they may result in final solutions.

Immediate Removals: The immediate removal program in Region 6 has successfully completed eight removal actions. (See FIGURE 5.) While each action presented its own unique problems, the most unique, as well as most demanding, has been presented by the removal action at the Crystal Chemical Site in Houston, Texas. Most of these problems resulted from the actions of third party contractors working for the bankruptcy trustee; i.e., purchase and dismantling of process equipment, etc. There is a need for clarification of the OSC's authority relative to third party actions at a Superfund site.

Coordination of the response program with the States, Coast Guard, and other Federal Agencies has proven to be most successful. This was evidenced by the response to the Livingston, Louisiana, train derailment which has been recognized nationally as a classic example of a coordinated state, federal, and local response action. This highly successful response action was due in large part to an active Regional Response Team (RRT), mock spill exercises presented by the Coast Guard, and the utilization of the RCRA grant mechanism to train and equip the Louisiana State Police for hazardous spill response.

Planned Removals: The Region has also requested, conducted, and completed a highly successful planned removal (the first one in the Nation using Superfund money) to remove 950 barrels of hazardous waste at Triangle Chemical in Beaumont, Texas, for approximately $74,000. (See FIGURE 4.) The Region is currently processing two additional planned removals in the State of Texas (Geneva Industries and Barker Chemical). Beginning in FY 84, the Region in conjunction, with OSWER will take specific actions to prepare States to assume the major portion of responsibility for handling releases of hazardous substances.

Remedial Actions: The type of action which is intended to provide a more final resolution for a site (which does not require immediate removal of some hazard) is the remedial action. This action can only be taken at an NPL site, from Region 6 viewpoint this would preferably be taken with a State lead, and is commonly referred to as a Superfund cleanup. The remedial action has four phases: remedial investigation, feasibility study, design, and construction. (See FIGURE 3.) The remedial action has no prescribed time or money limits but provides a framework for assessing the most cost-effective method of resolution at the site which takes into account the need for balancing the dollars spent at a given site against the nationwide need for the money.

Of the remedial actions taking place in Region 6, only two sites have an EPA lead. Region 6 has been a leader in implementing the OSWER strategy by having negotiated and awarded 11 Cooperative Agreements with States providing $3.1 million for State lead projects. Texas leads the nation in number of State lead projects at this writing. Despite the general lack of resources at the State level, the States are highly involved in the program.

Level of State Participation: Another objective of the OSWER strategy is to encourage the States to participate effectively in the cleanup program and continue the program beyond Federal involvement. Region 6 has 91 percent, about 11 State lead remedial projects. The Region has worked closely with the State of Texas to overcome early problems in their Cooperative Agreement sites, and the State is expected to be a leader in construction of site remedies. The Region has established

the first formal EPA overview system for State Cooperative Agreements. Two States (Texas and Louisiana) in Region 6 have legislatively established funds to provide match money in the Superfund program. Louisiana's fund can also be used to initiate and carry out cleanup without Federal involvement. Additionally, Louisiana has recently enacted legislation which exempts State hazardous waste projects from normal State procurement regulations. This is a procedure that may expedite Superfund projects in that State and may be a nationwide model for other States' Superfund activity.

The result is that Region 6 is moving aggressively into the Superfund program in conjunction with the OSWER Superfund strategy and expects to be a leader in meeting the goals of that strategy, including site cleanup and proper expenditure of Superfund dollars.

A final aspect of the Superfund program that is addressed as an objective of the OSWER strategy is cost recovery. Region 6 is preparing cost recovery cases for each site that will require expenditure of fund money. Three cases have already been referred to the Department of Justice (DOJ) for filing.

PART II SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS FOR AGENCY MANAGEMENT

LACK OF STATE RESOURCES TO MATCH FEDERAL FUNDS:

The lack of State resources is due in part to the fact that two Region 6 States (Arkansas and New Mexico) have not had legislation in place to give them authority or funds to respond to the Federal Superfund program. (Arkansas currently has a proposal before its Legislature that, if passed, will address the Superfund Program. New Mexico has passed similar legislation that goes into effect July, 1983.) In all five States, there is no provision for State funds for administrative overhead. Therefore, the startup of the Superfund program at the State level was done by a limited number of people on a limited to non-existent budget. This initial lack of resources resulted in a delayed startup of work after the award of some grants and a hesitancy to fully enter into the program (See FIGURE 1.) Additionally, only two of the States (Louisiana and Oklahoma) have specific funds allocated for initiating action, enforcement or State funded cleanup at the sites. We are assisting the States in compensating for the lack of resources. The resolution of the problem is State specific, but in general, some barriers may be the political atmosphere of the State, the overall wealth of the State, or the State's perception of the need for involvement. The lack of State resources impacts the Regional management by requiring an investment of EPA staff time in assisting the State with program initiation tasks (site submission process, grant application preparation, Community Relations Plan preparation, etc.)

PROGRAM MECHANISMS DEVELOPED SIMULTANEOUSLY WITH PROGRAM IMPLEMENTATION

The mechanism for reaching the actual cleanup phase for sites requiring remedial action is very involved and has resulted in the perceived lag time between the enactment of CERCLA and the "cleanups" or resolution of sites. While it is paramount to the program to allocate the fund monies in a reasonable and defensible manner (which has often meant delays in addressing the sites), the Region has developed ways to streamline the process. Some methods for streamlining the program involve: (1) providing money during the feasibility phase to allow the State to start its procurement procedures for design and construction and to allow the States to negotiate the Cooperative Agreement for design and construction in the feasibility phase as soon as a cost estimate or ceiling is determined; (2) amending existing Cooperative Agreements to allow for overtime to shorten contract times for on-site work; (3) developing, at the Regional level, an overview program to assist in keeping the Cooperative Agreement process on track; and (4) offering the States the opportunity to select zone contractors (who may subcontract) to save on procurement and contract negotiation time.

Approval of much of the streamlining will require EPA headquarters action. The Region is currently working with the States to implement streamlining at the State and/or Regional level.

LIMITED FEDERAL RESOURCES FOR TRAINING/CONTINUING NEED FOR REGIONAL CONTINGENCY PLAN

Especially in regard to immediate removal, there continues to be a demand for training, particularly in the area of personnel safety and protection. As a result of a high level of interest exhibited by Oklahoma and New Mexico, there was a 1-week safety training courses, presented to Oklahoma agency personnel in February 1983. A course will be presented to the New Mexico agency personnel in May 1983.

A major void in the Regional emergency response program is the lack of a Regional Contingency Plan. Lack of resources both in staff and funds has prevented the development and distribution of a Regional Contingency Plan. A core contingency plan was scheduled to be completed by April 1983. However, the development of the core contingency plan was delayed again this year due to the utilization of all staff as on-scene coordinators for immediate removals. Only after a Regional Contingency Plan is completed and distributed will there be an attempt to develop State and Local Contingency Plans. This is a vital effort if there is to be a coordinated federal, state, local response to emergency incidents.

ATTACHMENT A

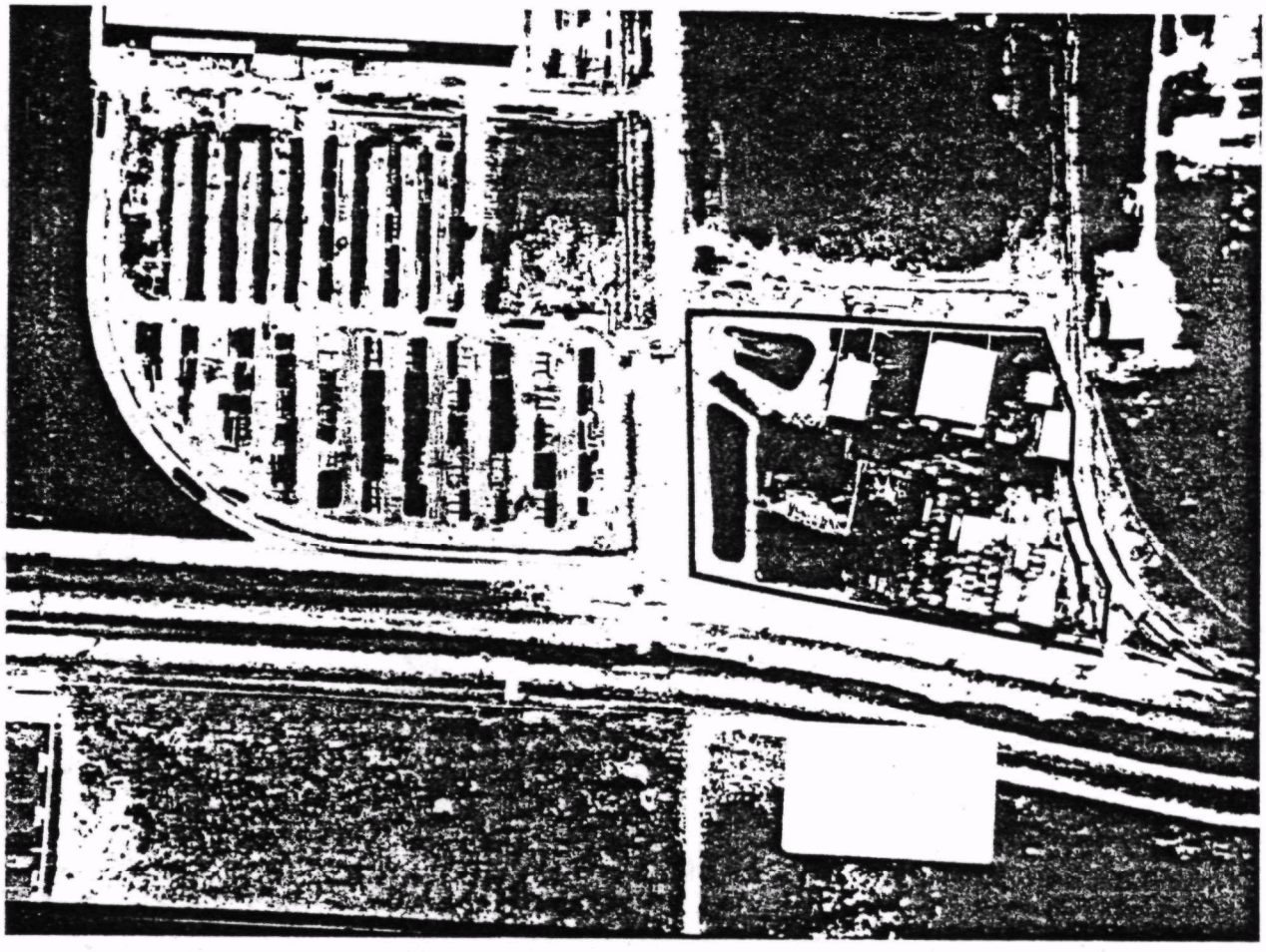
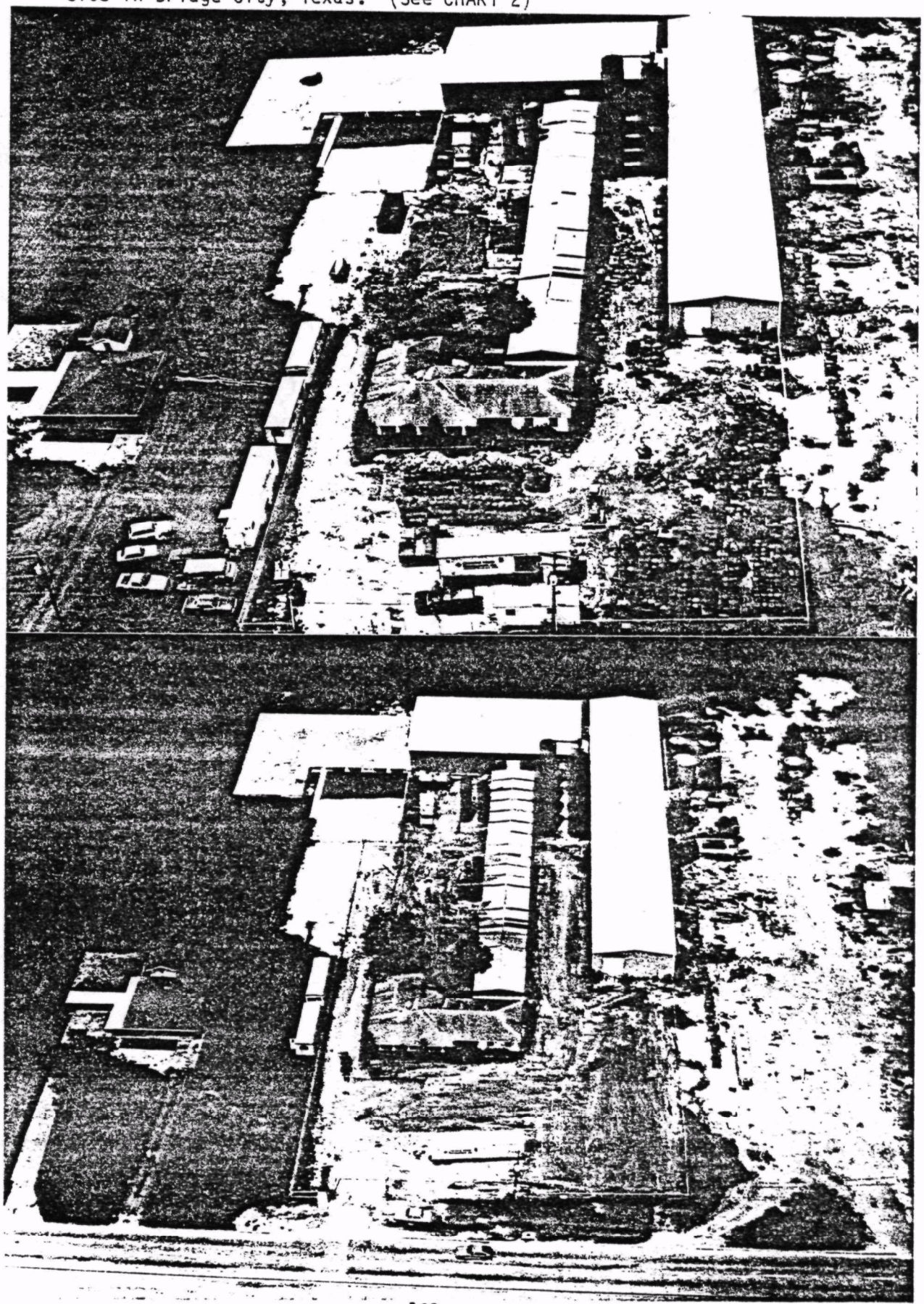
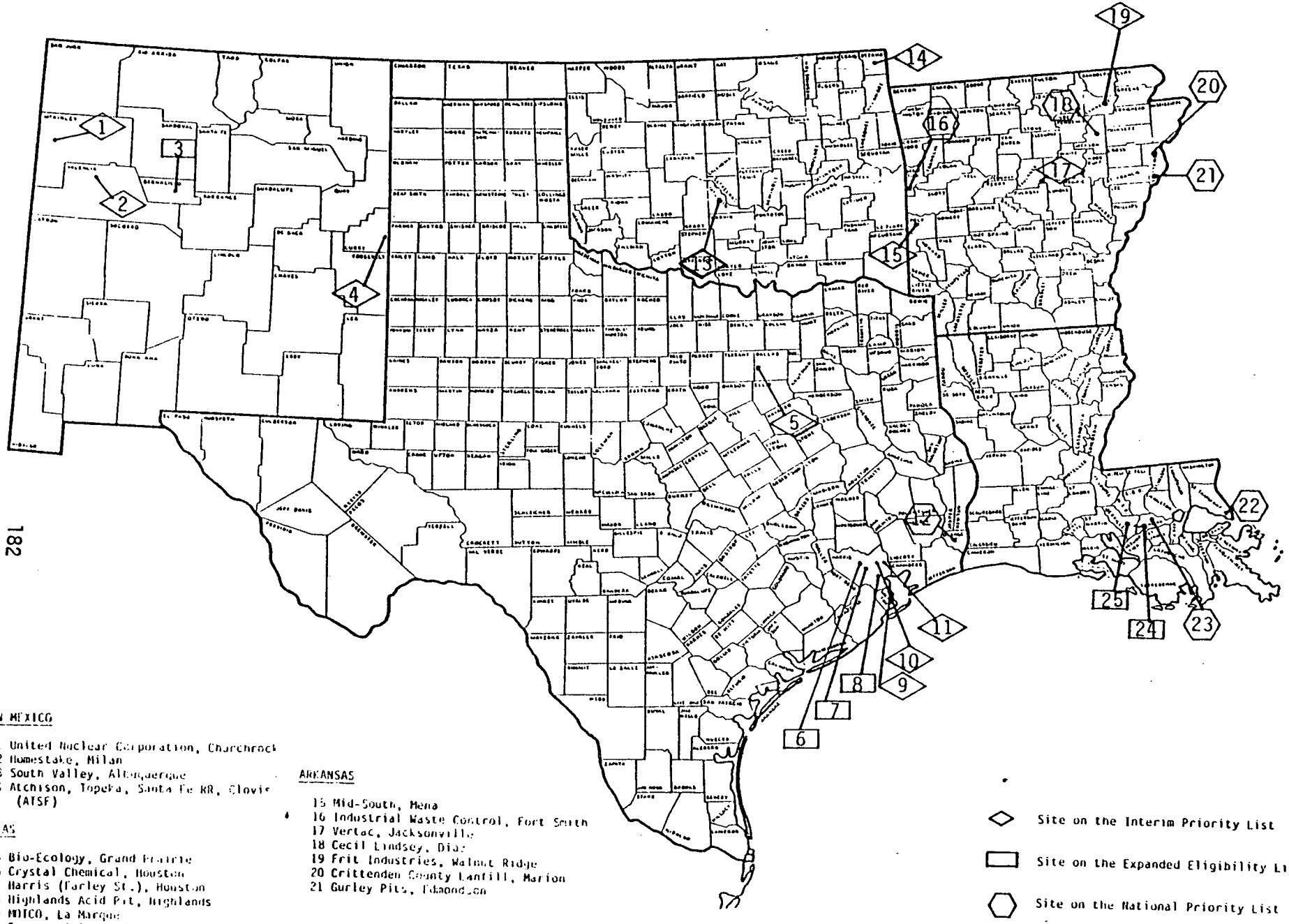


Photo depicting a hazardous waste site in Texas.

Before and After Photos of a Planned Removal at the Triangle Chemical Site in Bridge City, Texas. (See CHART 2)





NEW MEXICO

1 United Nuclear Corporation, Churchrock
2 Homestake, Milan
3 South Valley, Albuquerque
4 Atchison, Topeka, Santa Fe RR, Clovis (ATSF)

TEXAS

5 Bio-Ecology, Grand Prairie
6 Crystal Chemical, Houston
7 Harris (Farley St.), Houston
8 Highlands Acid Pit, Highlands
9 MOTCO, La Marque
10 French Limited, Crosby
11 Sikes Pits, Crosby
12 Triangle, Bridge City

OKLAHOMA

13 Criner, Criner
14 Tar Creek, Picher

ARKANSAS

15 Mid-South, Mena
16 Industrial Waste Control, Fort Smith
17 Vertac, Jacksonville
18 Cecil Lindsey, Dias
19 Frit Industries, Walnut Ridge
20 Crittenden County Landfill, Marion
21 Gurley Pits, Edmondson

LOUISIANA

22 Bayou Bonfouca, Slidell
23 Cleve Reber, Sorrento
24 Old Inger, Darrow
25 Bayou Sorrel, Bayou Sorrel

◇ Site on the Interim Priority List

▭ Site on the Expanded Eligibility List

⬡ Site on the National Priority List

FIGURE 1 - Development of National Priority List

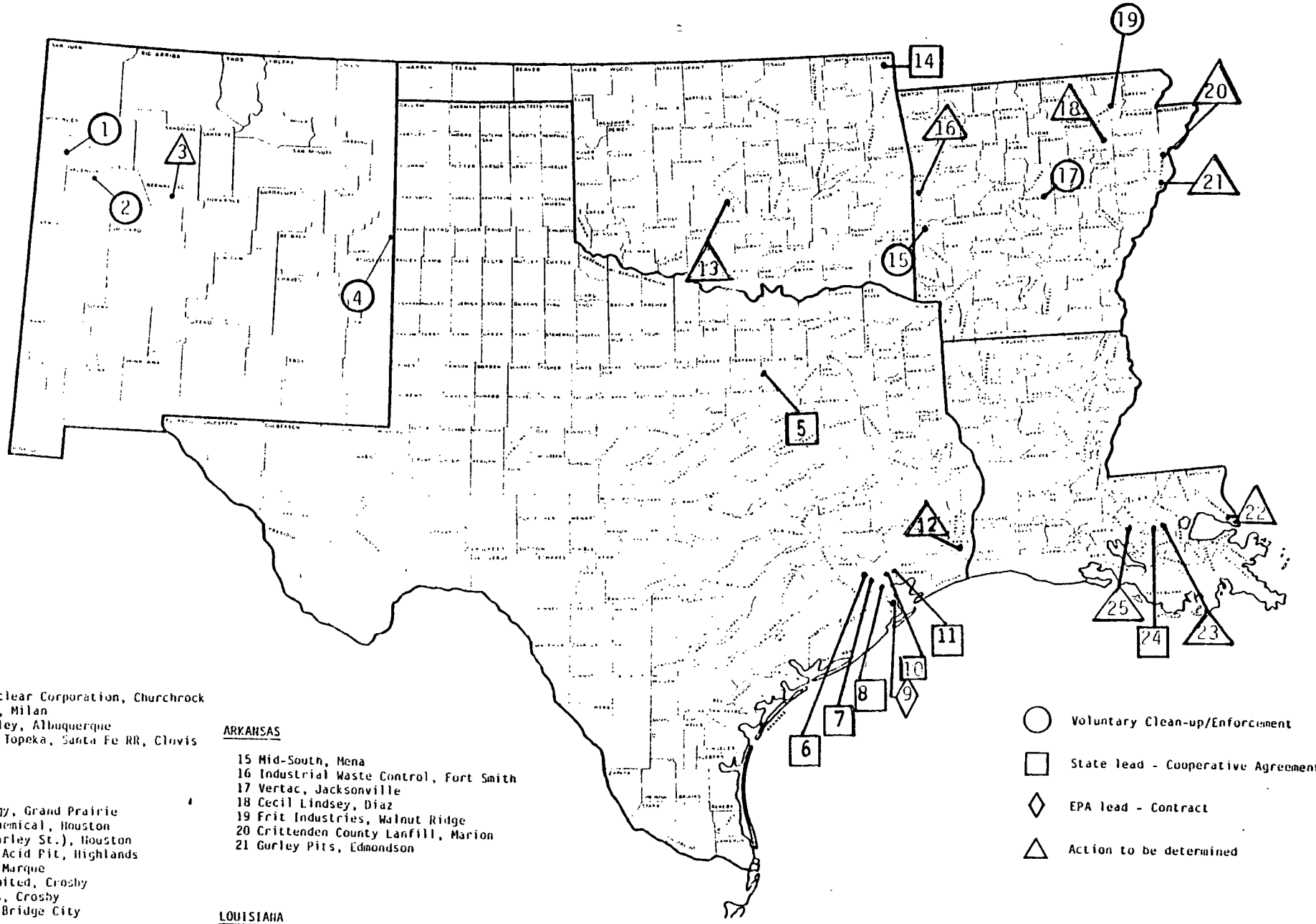


FIGURE 2 - Lead Responsibility at National Priority List Sites (Current to 5/1/83)

CHART 1 - Fund-Financed Remedial Action at Listed Sites (Current to 5/1/83)

SITE	ACTIVITY	WORK PLAN Start Date	End Date
ARKANSAS			
Cecil Lindsey, Diaz	Remedial Investigation	Anticipated	
Crittenden Co. Landfill, Marion	Remedial Investigation	Anticipated	
Industrial Waste Control, Fort Smith	Remedial Investigation	Anticipated	
LOUISIANA			
Bayou Bonfouca, Slidell	Remedial Investigation	Anticipated	
Bayou Sorrel, Bayou Sorrel	Remedial Investigation	Anticipated	
Cleve Reber, Sorrento	Remedial Investigation	Anticipated	
Old Inger Oil Refinery, Darrow	Remedial Investigtaion	05/83	08/83
NEW MEXICO			
South Valley, Albuquerque	Remedial Investigation	Anticipated	
OKLAHOMA			
*Tar Creek, Picher	Feasibility Study	04/83	12/83
Hardage/Criner, Criner	Feasibility Study	Anticipated	
TEXAS			
Bio-Ecology, Grand Prairie	Feasibility Study	02/83	08/83
*Crystal Chemical, Houston	Remedial Investigation	11/82	07/83
*French Limited, Crosby	Remedial Investigation	05/82	06/83
*Harris (Farley St.), Houston	Remedial Investigation	11/82	07/83
*Highlands Acid Pit, Highlands	Remedial Investigation	10/82	06/83
MOTCO, LaMarque	Feasibility Study	03/83	08/83
Sikes Pits, Crosby	Remedial Investigation	07/82	09/83
**Triangle, Bridge City	Remedial Investigation	Anticipated	

* Feasibility Study Funds Awarded ** Funds allocated for RI/FS 4/83

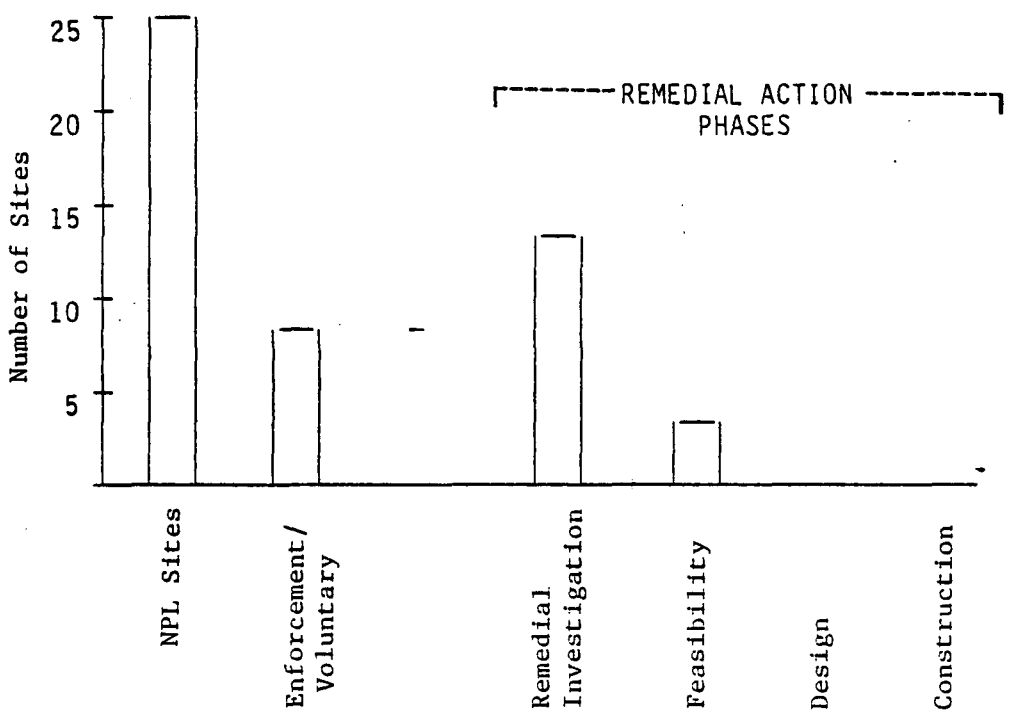


CHART 2 - Planned Removals at Listed and Non-Listed Sites (Current to 5/1/83)

COMPLETED REMOVALS	DATE STARTED ON-SITE	DATE COMPLETED ON-SITE
Triangle, Bridge City, TX	4/82	8/82

UNDERWAY	DATE STARTED ON-SITE	DATE COMPLETED ON-SITE
None	----	----

CHART 3 - Immediate Removal Actions at Hazardous Waste Sites Since December, 1980 (Current to 5/1/83)

Site	Date Completed	Funding	
Argent, Rio Rancho, NM	March 1982	CERCLA	$ 32,000
Midwest City, Midwest City, OK	October 1982	CERCLA	$ 14,000
French, Crosby, TX	July 1982	311 CWA*	$ 660,000
		CERCLA	$ 130,000
MOTCO, LaMarque, TX	September 1981	311 CWA	$ 125,000
Triangle, Orange, TX	April 1982	CERCLA	$ 8,100
Crystal, Houston, TX	February 1983	CERCLA	$ 762,000
Petro Processors, Baton Rouge, LA	March 1983	Potentiallly Respnsible Parties	
Old Inger, Darrow, LA	April 1983 (PhaseI)	CERCLA	$ 33,000
Pesses, Fort Worth, TX	May 1983	CERCLA	$ 350,000

*CWA - Clean Water Act, Section 311

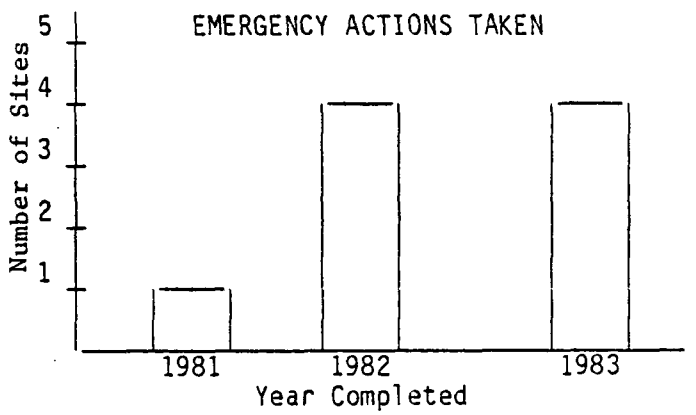


CHART 4 - EPA Enforcement Actions at Listed and Non-Listed Sites
(Current to 4/20/83)

Civil Enforcement

Total Cases Referred to Department of Justice	7
Cost Recovery Cases	3
Signed Consent Decree	1
Other Actions	3

Administrative Enforcement

Signed Administrative Order on Consent	1
Administrative Orders Prepared for Issuance	4

CHART 5 - Immediate Removals at Listed and Non-Listed Sites (Current to 5/1/83)

SITE	EMERGENCY SITUATION	RESPONSE ACTION
Argent Rio Rancho,NM	-Soil contamination resulting from discharge of highly concentrated sodium cyanide solution onto roadside and adjacent area -Direct public access in light industrial area	-Immediate removal and disposal of contaminated soil
Midwest City Midwest City, OK	-Fire involving chlorinated pesticides -Immediate threat: public access/direct contact and potential groundwater contamination	-Removal of contaminated soil and debris to approved hazardous waste disposal site
French Crosby, TX	-Waste contaminated with extremely high concentrations of PCB's -Surface water contamination and potential groundwater contamination -Direct public access to facility was a threat	-Secured facility from public access; repaired containment dike; removed contaminated sludge from areas outside the lagoon and transferred sludge into lagoon.
MOTCO LaMarque, TX	-Potential overtopping of dikes with potential release of acidic water contaminated with volatile organics -Threat to nearby marshy areas in Galveston Bay area	-Treatment of contaminated lagoon water(to within State limits) and discharge of treated water
Triangle Orange, TX	-Security/public access -Deteriorating and leaking drums of organics and corrosives -Contamination of soil, debris and structures	-Build fence -Minor improvements to site drainage
Crystal Houston, TX	-Arsenic-contaminated liquid -Soil contamination and potential surface runoff -Threat to public health	-Dewatering and clay-capping of the entire site -Removal of all product equipment and buildings from site
Petro Processors Baton Rouge, LA	-Dike overtopping and potential dike failure with subsequent discharge of lagoon contents contaminated with organics (oily sludge)	-Demand made of responsible parties and monitoring of their clean-up actions: drawdown and treatment of water (not a Federal clean-up)
Pesses Fort Worth, TX	-Soil contamination resulting from extremely high concentrations of heavy metals including cadmium, nickel, and copper -Potential airborne problem -Unsecured dumping site south of the main facility	-Removal of soil and deteriorating drums and disposal to approved hazardous waste disposal site.
Old Inger Darrow, LA	-Lagoons contaminated with waste oil and hazardous substances; overflowing due to heavy rains and flood conditions -Uncontrolled access	-Build fence -Improved dike to present overflow -Constructed berm to seperate site from adjacent swamp -(Anticipated: assessing alternatives for handling lagoon contents)

CHART 6 - Conditions at National Priority List Sites

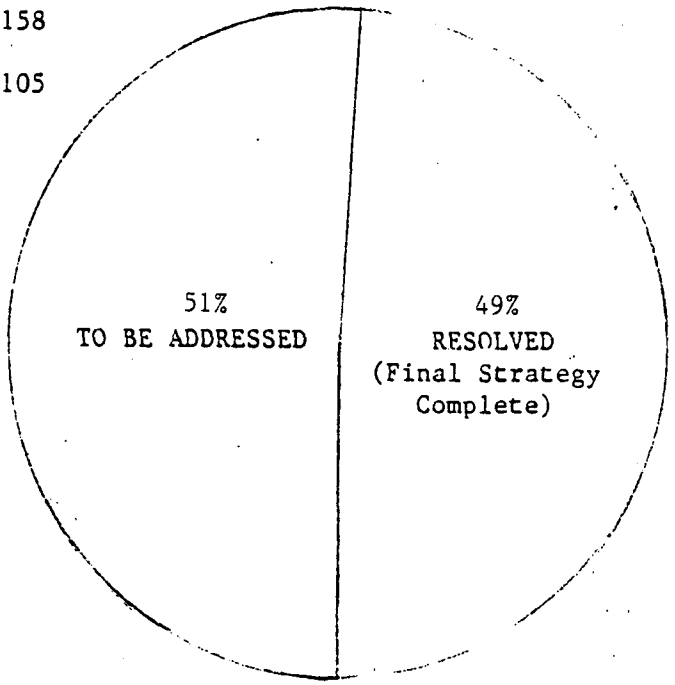
SITE	REASON FOR CONCERN
ARKANSAS	
Vertac (Jacksonville)	- Dioxin contamination of surface water, sediments, and aquatic life. - Pesticide and herbicide manufacturing facility.
Mid-South (Mena)	- Organics and arsenic contamination of wells. Threat of surface water contamination. - Former wood preserving facility.
Frit (Walnut Ridge)	- Sulfate wastes and metal oxide contamination of soil and surface water. - Fertilizer manufacturing activities.
Gurley (Edmonson)	- Heavy metal and low-level PCB sludges overflow from disposal pits.
Industrial Waste	- Heavy metal contaminants released with impoundment overflow. - Industrial and solid waste landfill and surface impoundment.
Cecil Lindsey (Newport)	- Heavy metals and hydrocarbon contamination of soil and threat of ground and surface water contamination. - Industrial waste disposal site.
Crittenden (Marion)	- Heavy metals threaten contamination of groundwaters. - Industrial and municipal waste landfill.
LOUISIANA	
Old Inger (Darrow)	- Heavy metals at close proximity to Mississippi River. - Abandoned oil refinery waste reclamation facility.
Cleve Reber (Sorrento)	- Tars, organics, and oily wastes stored in leaking and corroded barrels. - Hazardous waste dump.
Bayou Sorrel (Iberville Parish)	- Heavy metals contamination of soil. Site subject to flooding. - Hazardous waste dump.
Bayou Bonfouca (Slidell)	- Creosote contamination of surface waters and sediments. - Wood creosoting operation.
OKLAHOMA	
Criner/Hardage (Criner)	- Asbestos, cyanide, and flammable sludge contamination of ground and surface waters. - Waste Disposal facility.
Tar Creek (Ottawa County)	- Acid mine drainage contamination of ground and surface waters. Major aquifer threatened. - Iron and zinc mining operations.

SITE	REASON FOR CONCERN
NEW MEXICO	
Homestake (Milan)	- Uranium tailings contamination of groundwater. - Uranium milling operation.
South Valley (Albuquerque)	- Organics contamination of wells. - Numerous industries in area may contribute to problem.
ATSF/Clovis (Clovis)	- Trichloroethylene and diesel fuel contamination of groundwater. - Railway car washing facility.
United Nuclear (Church Rock)	- Uranium mining processing wastes contamination of surface water and sediments. - Uranium mill operation.
TEXAS	
French (Crosby)	- Industrial waste sludges contamination of surface water. - Disposal site located in floodplain.
MOTCO (LaMarque)	- Styrene tars and heavy metal sludges contamination of groundwater. - Waste recycling facility.
Sikes (Crosby)	- Petrochemical waste contamination, ground and surface water. - Waste disposal facility.
Crystal (Houston)	- Herbicide contamination of soil. - Herbicide manufacturing operations.
Highlands (Highlands)	- Sulfuric acid sludges from site threaten surface water and public water supply. - Chemical wastes dump.
Bio-Ecology (Grand Prairie)	- Acids, caustics, solvents contamination of shallow groundwater. - Waste treatment facility.
Harris (Farley) (Houston)	- Tars and sludges threaten contamination of groundwater. - Abandoned landfill.
Triangle (Bridge City)	- Organic wastes contamination of surface waters. - Chemical manufacturing and storage facility.

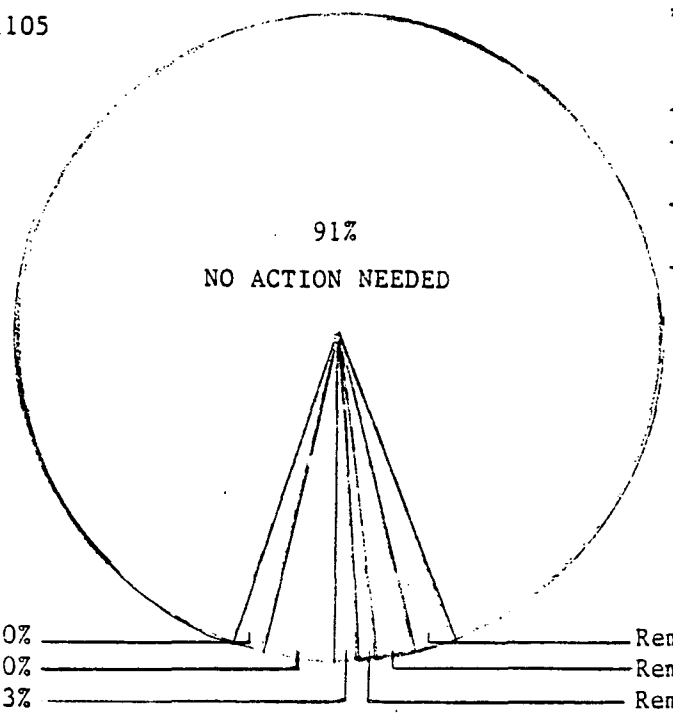
CHART 7 - ERRIS Sites in Region 6 vs Resolved Sites in Region 6 (Current to 4/20/83)

Total ERRIS Sites 2158

Resolved Sites (Final Strategy Complete) 1105



Resolved Sites (Final Strategy Complete) 1105



*POSSIBLE REASONS FOR NO ACTION NEEDED

-No hazardous waste on site
-Site closed out under State or RCRA
-Waste properly disposed of on site
-Site listed does not exist

Enforcement/EPA 1.0%
Enforcement/State 4.0%
Enforcement/Joint 0.3%

Remedial/EPA 0.8%
Remedial/State 2.0%
Remedial/3rd Party 2.0%

HAZARDOUS WASTE

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PART I - OVERVIEW OF ENVIRONMENTAL STATUS AND TRENDS

PART I - OVERVIEW ENVIRONMENTAL OF STATUS AND TRENDS

The Federal Resource Conservation and Recovery Act (RCRA) was passed by Congress in 1976. In May 1980, EPA published regulations which began the long process of implementing the Act. The basic philosophy of RCRA is to provide a "cradle-to-grave" management system for hazardous wastes. This system includes regulations requiring those persons generating, transporting, or treating, storing, or disposing of hazardous waste to notify EPA of such activity and those treating, storing, or disposing of hazardous waste to obtain permits issued by EPA (or delegated States) based on sound technical standards designed to protect the public health and the environment from dangers associated with hazardous waste.

Facilities that treat, store, or dispose of hazardous waste and were in existence in November 1980, were allowed to continue to operate without a permit under a temporary interim status until such time as EPA (or an authorized State) could evaluate whether to issue a final RCRA permit. Such facilities had to submit a permit application by November 1980, and must remain in compliance with interim status standards published by the agency. By November 1980, 5,243 facilities had qualified for interim status in Region 6 (See Chart 1). Additionally, 8,888 persons had notified EPA that they generate hazardous waste (See Chart 4), and 1,536 had notified EPA that they transport hazardous waste (See Chart 3).

By November 1982, the number of facilities with interim status had fallen to 1,038, a 71 percent decrease (See Chart 2). There are two basic reasons for this decline: (1) many facilities notified in error. They either thought they were handlers of hazardous waste and weren't or weren't sure and filed for protection in case they were; and (2) when EPA (or an authorized State) requests a permit application from a facility, some facilities are preferring to cease handling hazardous waste and are closing and thus dropping out of the system.

By November 1982, the number of companies generating hazardous waste in Region 6 had declined to 7,152, a 20 percent decrease (See Chart 4). This decline can be attributed to a clarification of each facility's status of management of hazardous waste. The number of transporters had risen to 1,582, a 4 percent increase, attributable to new companies entering the hazardous waste transporting business--an activity not requiring a permit from EPA (See Chart 3).

The first two years of the program have required a significant amount of adjustments in the data base. Most of these adjustments reflect clarification of status rather than the results of enforcement actions or permitting actions by the agencies administering the program. It is difficult to identify definite trends with the limited amount of hard information available. The permitting program for hazardous waste handlers has been effective for a year and a half, and because of the phased nature of the program, agencies are still in the process of gearing up to issue permits.

Chart 1 - Region VI Total TSDs

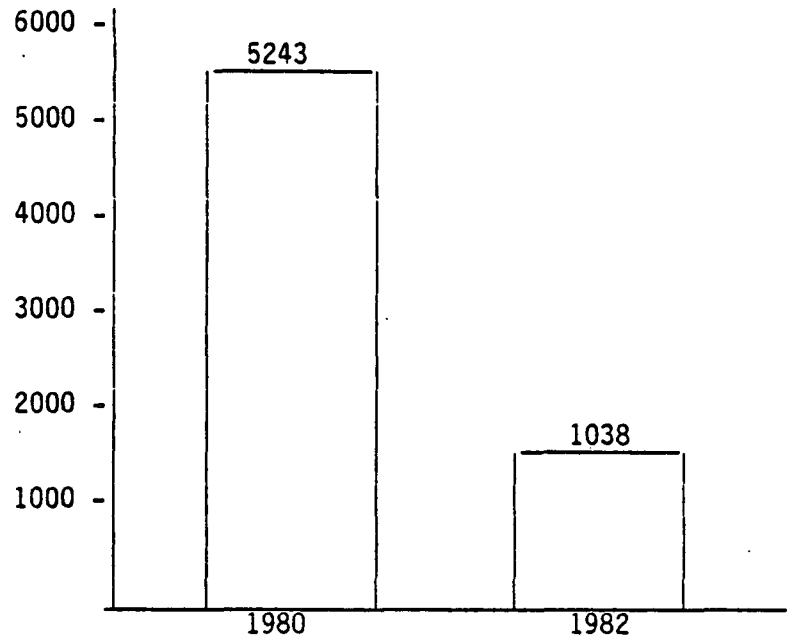


Chart 2 - Region VI TSDs By State

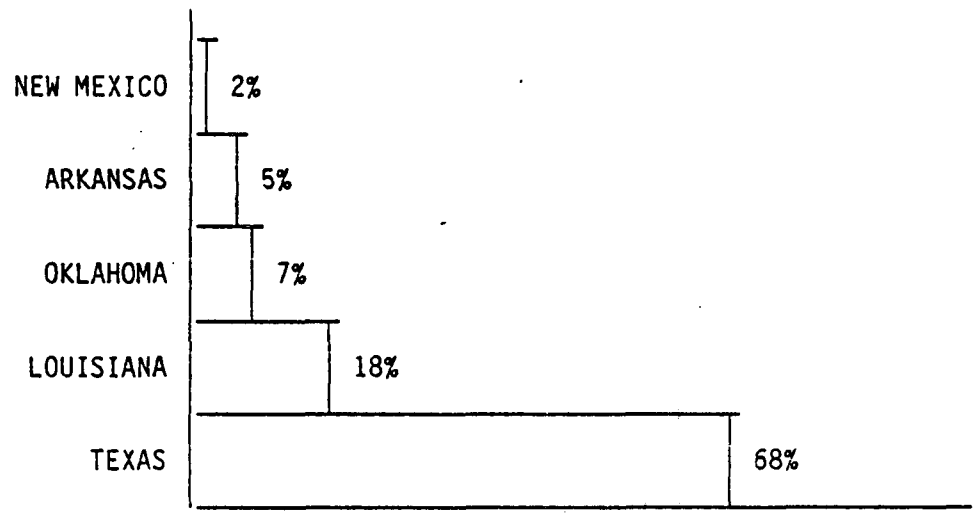


Chart 3 - Region VI Hazardous Waste Transporters

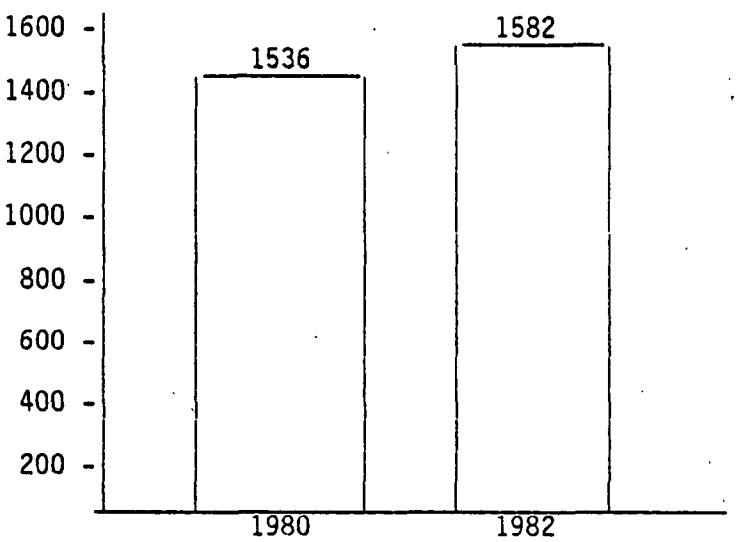
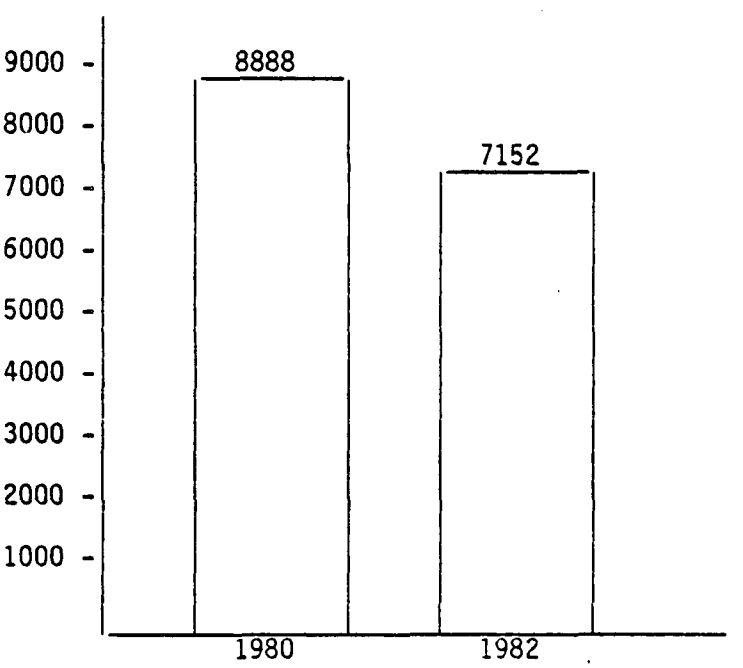


Chart 4 - Region VI Hazardous Waste Generators



One hazardous waste management permit has been issued by Region 6, and 64 other RCRA permit applications have been requested by the Region. Since January 1982, Region 6 has processed 48 permit applications (or facilities have chosen to drop out of the system). An additional three applications were voluntary submittals.

PART II - SIGNIFICANT ENVIRONMENTAL PROBLEMS AND IMPLICATIONS FOR AGENCY MANAGEMENT

Problems involving the implementation of the Hazardous Waste program are common to all new programs: lack of sufficient data to accurately define and predict existing and future universes of regulated facilities of concern to the program; lack of adequate information to accurately forecast resource needs; confusion within both the regulated community and the regulators concerning applicability of the program; and, as the program is delegated to the States, the need to maintain reasonable oversight to assure adequate and consistent implementation without encroaching on the States' independence or usurping their authority.

HAZARDOUS WASTE PROBLEMS

Data Needs: The data needs of the hazardous waste management program are being realized as the program is developed and implemented. The lag time between the realization of the need and the development of the process to meet the need has caused problems in being able to maintain both historical and current data. As the program develops there will be corresponding development of the data management capabilities; but in the interim, the program suffers from a lack of accurate and adequate data. Compounding the problem are mechanical problems, such as a lack of sufficient computer time, a lack of sufficient hardware, and lack of an implementable information transfer system between the states and EPA because of differences in equipment and/or systems.

Immediate data needs include the ability to quickly retrieve information on both individual facilities and compiled data concerning all facilities. Lack of consistent ability to quickly enter and retrieve data hampers the ability of the program staff to efficiently plan work and respond to expressed and implied needs.

Long range data needs center around the ability to maintain an historical data base. This ability provides information to accurately identify noncompliance trends of a single facility. Noncompliance trends can trigger enforcement actions, point to training needs for regulatory personnel as well as facility personnel, identify needed regulatory amendments, and assist in the allocation of resources.

An historical data base will also provide the information needed to describe

the successes (and failures) of the program. This information is vitally important to the ability to explain the program to governmental and industrial leaders and to the general public. It places in context the activities undertaken by agencies involved with the implementation of the program and assists leaders in developing appropriate budgets and appropriations.

Predicting Resource Needs: Resources needed to adequately implement the Hazardous Waste Mangement Program on the State and Federal levels remain a matter of conjecture from one year to another. Lacking is an agreement on the specific resources necessary to carry out not only the entire program but also on the costs of individual activities. Without experience to demonstrate unit costs, managers have to proceed on estimates based on experience gleaned from other (sometimes dissimilar) programs, managerial intuition based on specific insight, best-guess estimates, or pure speculation.

Resulting from the haphazardness of the forecasting is a wide variety of resource needs among the various state agencies and EPA. Each agency makes estimates of resource needs based on its specific idea of the costs of the individual activities. The resulting array of costs covers an extremely wide area from only a few dollars per activity to thousands of dollars for the same activity. The underlying reason for this great disparity lies in the lack of experience of the agencies in the budgeted activities.

Experience in the program will teach how to plan resource needs. The amount of experience it will take to learn the lesson depends on the availability of data and its accuracy. Quickly available, accurate data will hasten the ability to adequately forecast resource needs into a foreseeable future. Lack of accurate data or lags in obtaining this data will impede the basic planning processes to a possibly serious degree.

Developing Program Knowledge: The Hazardous Waste Management Program, though long in planning and development, has been implemented over a relatively short time span as required by RCRA. Additionally, since the first set of major regulations were published on May 19, 1980, these regulations have been amended more than 150 times. The rapid implementation and extensive revisions have resulted in differing degrees of understanding of current program status among the regulated community and the federal and state agencies implementing the program. The main points of confusion revolve around two central issues: applicability of the regulations to a specific facility or group of facilities; and the methods by which a facility can achieve compliance.

Problems associated with the applicability of regulations to facilities include determining if the waste handled is hazardous, whether or not the facility is eligible for a small generator exemption (a facility which generates less than 1000 kilograms of waste a month), and the applicability of non-technical interim status standards (e.g., financial responsibility requirements, closure/post closure care standards, compliance with emergency

response requirements) to facilities.

Facility personnel often misunderstand, not only how to comply with certain standards, but generally what constitutes compliance. The first few inspections of a facility are a learning experience for both the inspector and the facility. Compounding this with the many changes in the regulations, it is difficult for both the government and the facility to maintain consistency and each inspection of a facility turns into a training course because of changes in regulations since the previous inspection.

Reducing confusion can be effected by aggressive education and training aimed at both facility and agency personnel. By and large, industry, through their associations, trade groups, etc., have undertaken the task of educating and training their personnel. The federal role is, first of all, to train federal personnel, and, most importantly, to educate and train state agency personnel, especially in states that have been authorized to operate their programs in lieu of the federal program.

Training of state personnel should take two forms: first, through regular visits to the states to review the state program and conduct joint inspections, EPA personnel can impart certain information through "hands on" experience; second, regularly scheduled workshops on the implementation of the hazardous waste management program will provide federal and state personnel the opportunity to exchange ideas, receive information updates, and share experiences. These workshops should be scheduled often enough so that there is as little time lag as possible between regulation changes and training.

State Oversight: Section 3006 of the Resource Conservation and Recovery Act requires the EPA Administrator to authorize states to operate their program in lieu of the federal program unless the state program is not equivalent to the federal program (or substantially equivalent, for an interim authorization period allowing states to develop equivalent programs). EPA policy, on both the national and regional levels is to provide the authorization of state programs a high priority. Region 6 and the States in the region are aggressively pursuing authorization of state programs. It is expected that all of the Region's States will be authorized by the January 1985 deadline. However, as the states are authorized, EPA's direct involvement in the program becomes less and less. It becomes imperative that, as EPA withdraws from active involvement, there be oversight mechanisms that assure adequate and consistent implementation of the program within the states.

Evaluations for program effectiveness and consistency generally occur in two forms: through formal, periodic on-site reviews; and through less formal, continuous interactions between federal and state staffs. The formal, periodic on-site reviews are generally accomplished once or twice a year and are considered exhaustive examinations of all aspects of the state program and which result in formal problems identification and communication between the agencies' upper level management. The less formal evaluations usally occur on a staff to staff basis and involve frequent communications by telephone and personal visits. Federal personnel become intimately knowledgeable of the operation of the state program and are able to monitor minute shifts in programmatic output and direction and

effect corrections rapidly and, usually, successfully so long as the corrections do not involve policy matters. Each of these approaches contain strengths and weaknesses. The optimal approach, though, is a combination of the two that can be fitted into existing resource constraints, achieve an acceptable success rate in accurately evaluating the state's progress, provide essential training for state personnel, and which is not burdensome for the state in terms of utilization of staff time or which appears to be second-guessing or an attempt to force the state into the federal mold.

The challenge is to design an evaluation system that works. The benefits must be immediately apparent and substantial; the drawbacks minimal and insignificant. Whatever system is adopted must have several important characteristics: (1) it must not detract significant time and resources from the implementation of the program at the state level; (2) it must be easily understood by both federal and state personnel; (3) it must result in significant improvements in the implementation of the program, or, at least, document significant results; and (4) it must provide the federal agency the information it needs to document successes in program implementation to higher agency management, to the President, to Congress and to the general public.

RCRA State Authorizations: Since November 19, 1980, portions of the federal hazardous waste program have been available for delegation to the States. Four of the five Region 6 States were degelated within 60 days of the availability of Phase I. Arkansas received Phase I Authorization on the day it became available and was the first State in the Nation to receive such Authorization.

Region 6 has maintained a high commitment to authorizing State programs as soon as the different phases or components are available and the States are capable. Texas was the first state in the country to receive Interim Authorization for Phase II, Components A & B. It is expected that a Region 6 State will be among the first one or two in the country to receive Interim Authorization for Phase II, Component C.

Being on the cutting edge of delegations has distinct advantages for both the States and the Region. The primary advantage is an avoidance of duplicative programs. Thus, the regulated community only has to deal with one level of government. Also, by delegating the program as soon as it is available, the Region does not have to administer the program before turning it over to the State.

Any disadvantages lie in the phased nature of the program. The federal hazardous waste management program is being implemented in two phases: the Phase I program which includes Generator and Transporter standards and standards for facilities with Interim Status; and Phase II which is standards for permitting facilities which treat, store, or dispose of hazardous waste. Phase II is further divided into Components corresponding with the different types of facilities: A for facilities which treat or store hazardous waste in tanks and containers; B for incinerators; and C for land disposal facilities.

State programs may be authorized for each Phase or Component as it is available. If each state applies for each phase, or component, it would mean eight applictions from each State for Interim Authorization and two for Final Authorization (presuming one draft application per phase or component; some States have submitted more than one draft.) This would be a total of 50 applications the Region would have to process.

Region 6 processed four applications in FY80; seven applications in FY81, and five applications in FY82. The reason for the drop from 81 to 82 is that there was a year and a half between the promulgation of Components A and B and the promulgation of Component C.

It is projected that the Region will process 11 applications in FY83 and 12 applications in FY84. The processing of applications is resource intensive. Agency guidance requires the review of and comment on a draft application within 30 days. The statute requires the publication of a decision in the Federal Register within 90 days of notice of receipt of an official application.

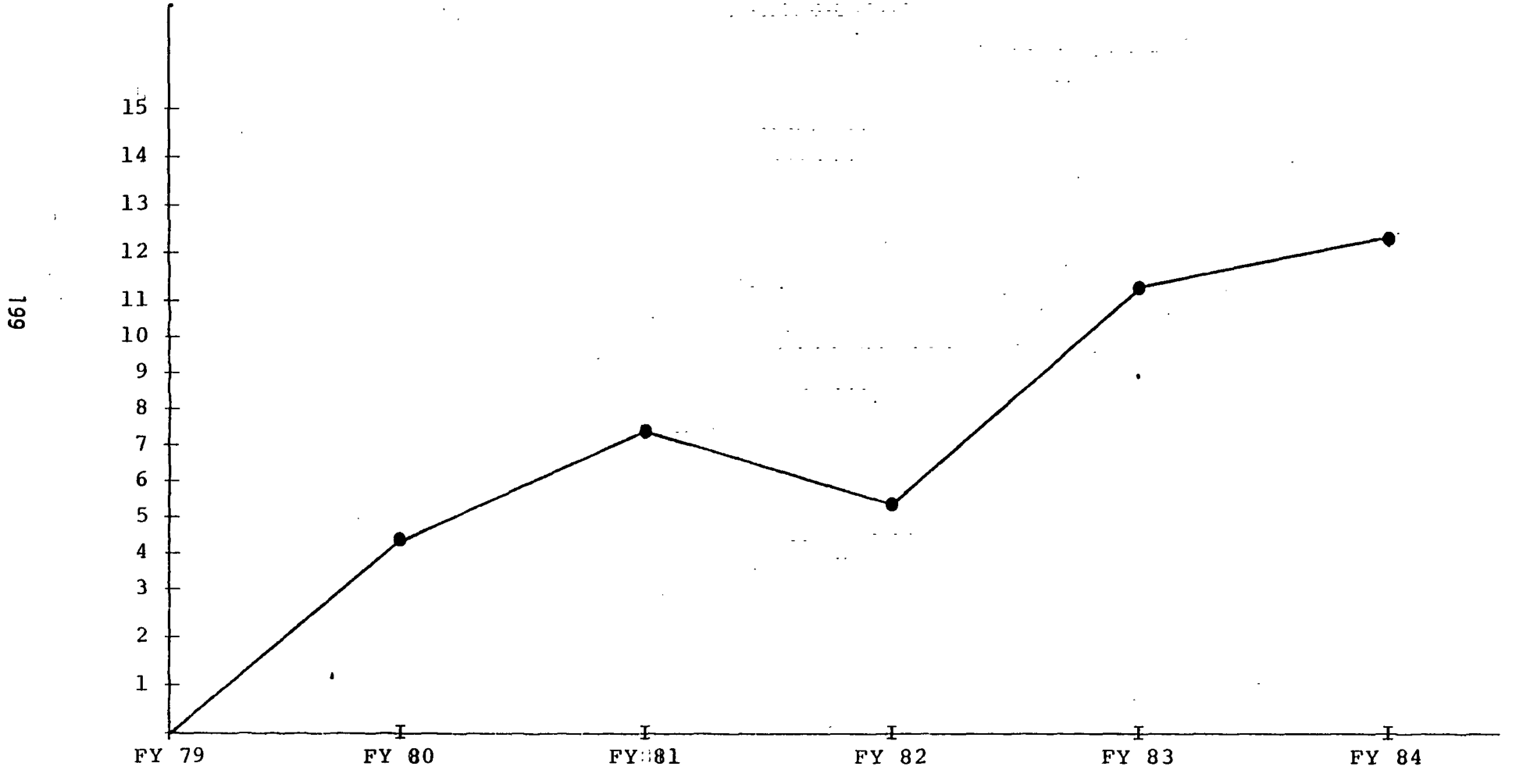
An application must be reviewed for technical and procedural adequacy. Such review usually requires a team of six to seven regional personnel. Often policy level managers must become involved in the review. This is most often occasioned by the raising of issues not encountered before. This happens often in Region 6 because of the consistent leadership roles the Region's states have undertaken.

Additionally, a significant amount of developmental work must take place between the States' applications, especially for Final Authorization. This is because Final Authorization is much more difficult since the states have to demonstrate equivalence to the Federal standards.

The bulk of authorization resources should be devoted to the development of the state programs. This reduces the need for severe resource expenditures during the application consideration process and frees them for assistance in program implementation.

RCRA Permitting: During the past 3 years, EPA published regulations and amendments to these regulations for a variety of hazardous waste management activities. In July 1982, EPA finally issued regulations for land disposal facilities. These regulations, along with those published earlier, are very complex, voluminous, and require a significant amount of review time to be fully understood. In addition to these regulations, EPA developed numerous technical, support, and guidance documents to assist in writing RCRA permits. Although not a responsibility, it is our duty to provide assistance to the regulated community on understanding these regulations. Also, while EPA has essentially completed development of the RCRA regulations, policies are yet to be developed which provide guidance on the implementation of these regulations, i.e., termination of interim status, permit requirements for closure prior to January 26, 1983, guidance documents for development of called-in Part B's for land disposal facilities.

Chart 5 - NUMBER OF AUTHORIZATION APPLICATIONS PROCESSED BY REGION SIX PER YEAR



The phased approach to State authorization has temporarily created a permitting program whereby existing or proposed hazardous waste facilities may be subject to dual permitting. In Region 6, this situation exists in all five States and will remain so until the States are authorized for all components.

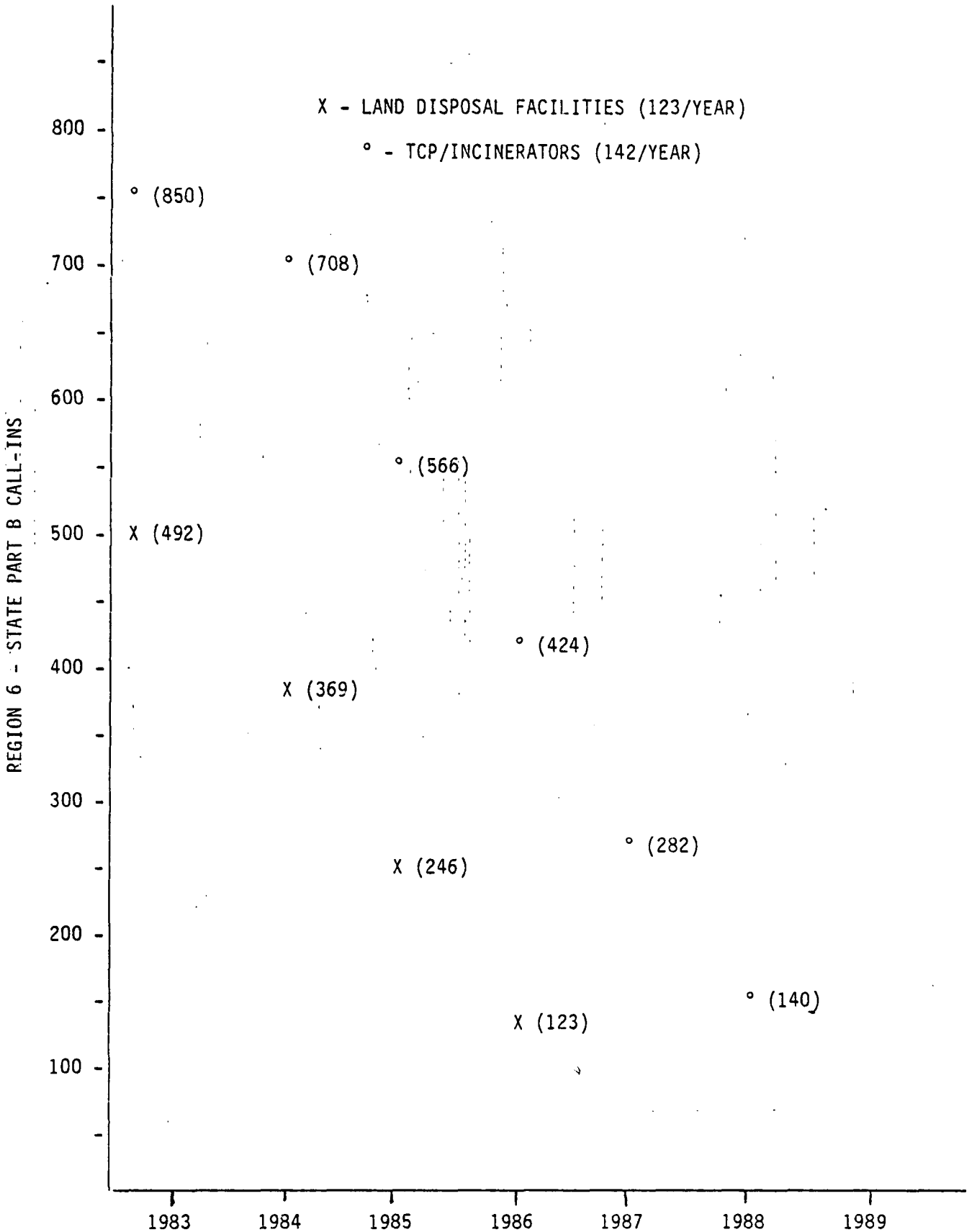
Presently there are 492 land disposal facilities in Region 6. Under current EPA Guidance that these facilities should submit Part B applictions within four (4) years, Region 6 and its State agencies would need to call-in 123 applications per year (see Table 5). In addition to land disposal facilities, there are 850 facilities that treat or store waste in tanks, containers or piles (TCP), and TCP/Incinerator facilities in Region 6. Implementing EPA guidance for these facilities, i.e., call-ins within six (6) years, would require the Region and the State agencies to request 142 applications per year.

Region 6 has called in Part B applications for land disposal facilities in all five States. If permits are not issued by the time a State is authorized for Component C, there will be some delay during the transfer of the application to the State. This delay is being minimized in Region 6 by closely working with the State agency during our permit review and permit development while they work toward authoriztion.

With the predicted increase in RCRA permitting activities, many delegated States, as well as EPA, will find it difficult to staff programs with qualified and experienced personnel. It is anticipated that competitiion with industry/consulting firms will generally preclude the maintenance of a full complement of permit writers. Most often staffing is accomplished by hiring recent technical graduates who require additional and substantial training by the agency. The training involves familiarity with the pertinent RCRA/State regulations and understanding of the agency's structure and functions as well as a need for field training.

RCRA is quite explicit as to the requirements of public participation for permit actions. In general, the EPA public participation process includes publication of intent to act on an application, opportunity for a public hearing, and a public hearing is held. EPA hearings on permits are usually less than 2 days after which the record is opened for 1 to 2 weeks to provide the public an opportunity to submit additional comments. In some States, however, the public participation process is adjudicatory in nature and has been known to extend from months to years. This is where siting is the main objection. For existing facilities seeking a RCRA permit, past operation problems (surface runoff, air emissions, spills) can also result in a protracted comment period. Region 6 is very experienced with public hearings on controversial permits. During the past 4 years, Region 6 has included the RCRA public participation procedures for the TSCA program. Public hearings have been held for all PCB incineration applications. While this approach lengthens the review process, it does provide the public and their elected officials an opportunrity for involvement in EPA's decision process. Without question, the strongest objection to approvals by EPA is siting, i.e., not in our backyard.

Chart 6 - RCRA Permitting Backlog



BARRIERS

The barriers to the proper implementation of the Hazardous Waste program are essentially impediments to free flow of accurate information among the States, the regulated community and EPA.

- There is a lack of sufficient data to accurately define and predict the existing and future universe of regulated facilities of concern to the program;
- There is a lack of adequate information to accurately forecast resource needs;
- There is confusion within both the regulated community and the regulators concerning applicability of the program; and
- There is the need to maintain reasonable oversight of authorized states to assure adequate and consistent inplementation without encroaching on the states' independence or usurping their authority.

IMPLICATIONS FOR AGENCY MANAGEMENT

Overcoming the barriers to the proper implementation of the Hazardous Waste program will result in a more effective program. Easing the exchange of information is the main focus of overcoming the barriers.

- Provide sufficient computer software, hardware and access to the equipment which rovides the ability to quickly enter and retrieve information and which provides an historical data base;
- Maintain and provide accurate, easily available, data on the resources necessary to implement the program for both the overall aspect and an item by item cost basis;
- Provide training for federal and state personnel as often as is necessary to remain current with program changes;
- Provide an evaluation system for state programs which can be fitted into existing resource constraints, achieve an acceptable success rate in accurately evaluating the state's progress, provide essential training for state personnel, and which is not burdensome for the state in terms of utilization of staff time or which appears to be second-guessing or an attempt to force the state into the federal mold; and
- Devote the bulk of authorization resources to the development of state programs rather than to the application consideration process.

PESTICIDES

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PART I - OVERVIEW OF ENVIRONMENTAL STATUS AND TRENDS

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PESTICIDES

Arkansas, Louisiana, New Mexico, Oklahoma and Texas have been delegated primary enforcement authority through cooperative agreements authorized by the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) as amended. These cooperative agreements include the regulation of the distribution and use of pesticides within the state. The states usually prosecute violators under state law, but may refer state investigations to EPA for enforcement action under FIFRA.

EPA provides up to 85% of the funding to the states to conduct this grant program. EPA also provides training to state personnel in investigative techniques, case preparation and analytical techniques.

The cooperative agreements include a state priority setting process which identifies the most important problem areas in each state and allocates resources to deal with them. The priorities were identified by analyzing prior year complaints and assigning a harm value (weight) to each complaint based on the determination of the site and type of application, the verification of human exposure and/or environmental contamination. All five states in Region 6 have completed this priority setting process and have identified pesticide use as the most important problem in each state. This is in large part due to the population increase in Region 6 which has resulted in movement of families into agricultural areas.

The progress a state is making in resolving priority problems is identified during mid-year and end-of-year evaluations. This progress is measured by the accomplishment of projected outputs and special efforts on priority problems. Pesticide use is a long range problem which is complicated by the population increase in Region 6.

The outputs under the cooperative agreements were shifted in FY-83 to emphasize pesticide use/misuse. Each State met or exceeded their projected grant outputs which is used as a measure of success in evaluating the cooperative agreement. The number of use complaints received by the five states have decreased over the past few years from 1,970 complaints in 1980 to 1,554 complaints in 1982. Although this decrease in complaints is due to many factors and cannot be fully attributed to the state enforcement programs, it is very encouraging.

State Priority Problems and Approaches for Addressing These Problems:

Arkansas	Priority Problems	Percent Harm
	Agricultural Crop Damage	70
	Garden Damage	21
	Home/Yard/Lawn Damage	7

These problems are primarily caused by the drift of herbicides from the target site to adjacent areas.

A very successful technique being utilized by the Arkansas State Plant Board to address these problems is pre-season inspections of commercial applicators to caution them on pesticide applications and discuss penalties for label violations and excessive damage complaints.

The Arkansas State Plant Board has also increased its educational activities by participating in user association meetings and the use of news letters.

Louisiana	Priority Problems
	Human and Animal Alleged Injury
	Agricultural Crop Damage
	Garden Damage
	Home/Yard/Lawn Damage

These problems are primarily caused by the drift of herbicides from the target site to adjacent areas.

The Louisiana Department of Agriculture has primarily addressed these priority areas through support for passage of a new pesticide law which will allow assessment of civil penalties and the suspension or revocation of applicators licenses. This will provide the state with additional enforcement options which should increase the effectiveness of their program. The Louisiana Department of Agriculture has also increased its participation in user association meetings.

New Mexico	Priority Problems	Percent Harm
	Non-Agricultural Incidents	
	Involving non-agricultural licensed applicators	42
	Involving homeowner use	27
	Agricultural Incidents	
	Involving aerial application	16
	Involving ground application	5
	Not involving application (storage, disposal, etc.)	10

These problems are primarily caused by the use of pesticides by pest control operators in homes and the use of pesticides by homeowners.

The New Mexico Department of Agriculture has utilized several innovative enforcement techniques to address these problems. Performance evaluations for commercial applicators are conducted when necessary. The applicators practices and procedures are evaluated and training and assistance are given in deficient areas. Also a toll-free phone service is provided for use by pesticide dealers with questions about an applicator's certification and by persons with pesticide related problems.

Oklahoma	Priority Problems	Percent Harm
	Structural Pest Control	45
	Agricultural Plant	31
	General Pest Control	9
	Right-of-Way	8

These problems are primarily caused by the use of pesticides by pest control operators in homes and the drift of aerially applied agricultural pesticides from the target site to adjacent areas.

The Oklahoma State Department of Agriculture is furnishing the State Board of Realtors and FHA with information on pest control operators who file false termite reports. The Oklahoma State Department of Agriculture has also begun making press releases on applicator license suspensions and revocations to local newspapers in the area where the offense occurred.

Texas	Priority Problems	Percent Harm
	Herbicide Applications	67
	All other agricultural pesticides	10

These problems are primarily caused by the drift of herbicides from the target site to adjacent areas.

Because of the problems with drift from the aerial application of herbicides, the Texas Department of Agriculture has begun recertification of aerial applicators. Thus far, 643 applicators have been recertified. The Texas Department of Agriculture has also proposed new regulations to classify nine herbicides as state-limited-use pesticides. This will require an applicator to be certified before using the products. The state feels that this will eliminate the use of these products by untrained applicators.

PART II - SIGNIFICANT ENVIRONMENTAL PROBLEMS

Pesticides problems that are specific to the water quality media are discussed under that media. This section discusses those problems that are of a multimedia nature.

IMPORTED FIRE ANT

The imported fire ant is a major pest in Arkansas, Louisiana and Texas. In Region 6, 91,757,760 acres are infested with 5,000,000 acres in Arkansas, 28,757,760 acres in Louisiana and 58,000,000 acres in Texas. Pesticide products are registered to control this pest in residental, recreational areas, institutional areas and pastureland. No pesticide product has been registered for aerial application to agricultural cropland for fire ant control since the cancellation of Mirex by EPA in 1977.

The imported fire ant is very aggressive, inflicting a painful sting to which some people are allergic. Agricultural economic losses occur through damage to farm harvest equipment from the mounds, reduction in crop yield and reduction in grade and price for commodities containing fire ant materials.

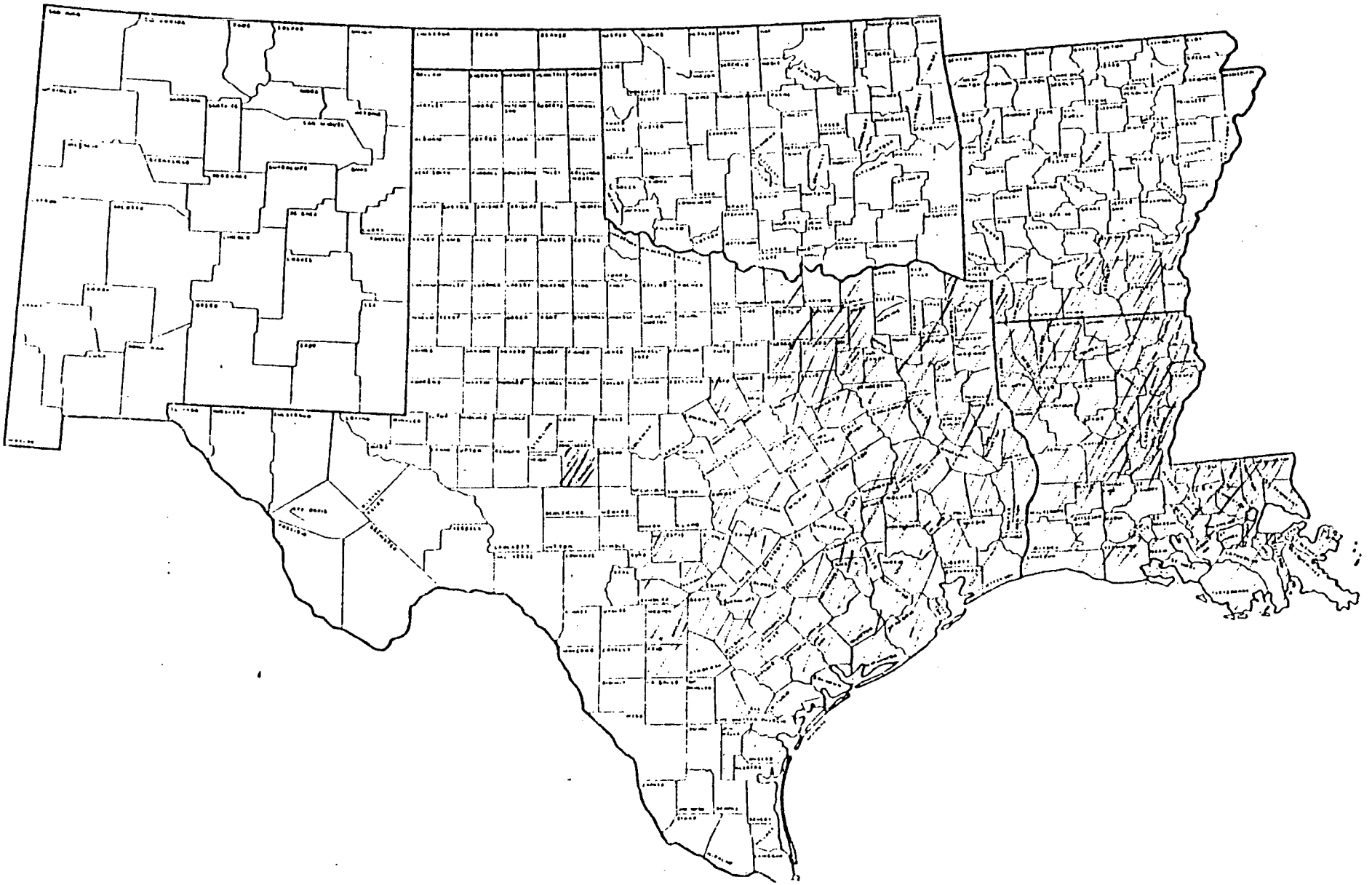
In 1982, the Arkansas State Plant Board and the Texas Department of Agriculture requested specific exemptions under Section 18 of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) as amended to use Ferriamicide to control the imported fire ant on agricultural cropland and other sites. These requests were granted by EPA and were subsequently challenged in court by environmental groups. Both Arkansas and Texas withdrew their requests and the emergency exemptions were rescinded by EPA on December 7, 1982.

At the present time, one registration application is pending for the pesticide product "Amdro" which includes aerial application to cropland. Also, it is anticipated that future requests will be forwarded by affected states to use Ferriamicide under Section 18 of FIFRA.

A decision by the Office of Pesticide Programs is needed on the pending registration application for "Amdro" for aerial application to cropland or Section 18 requests from the states should be granted for aerial application to cropland.

Table 1

Imported Fire Ant Infested Counties



PREDATOR ANIMAL CONTROL

Wild animals, particularly coyotes, that prey on livestock have always been a problem for farmers and ranchers in New Mexico and Texas. On March 9, 1972, EPA suspended and cancelled the registrations of predacide products containing Compound 1080 (sodium fluoroacetate), strychnine, sodium cyanide and thallium sulfate.

At the current time, only one predacide product, the M-44 spring loaded ejector device, is registered with EPA. Also, both New Mexico and Texas have been granted Experimental Use Permits under Section 5 of the Federal Insecticide, Fungicide, and Rodenticide Act as amended to conduct limited field testing with Compound 1080 toxic collars.

Because of registration applications from several states for Compound 1080 toxic collars, large bait stations and single lethal dose (SLD) baits, EPA held informal hearings to review the use of Compound 1080. It was concluded from these informal hearings and other information available to EPA such as existing Experimental Use Permits and registration applications, that there is substantial new evidence which may affect the 1972 suspension and cancellation. As required by 40 CFR 164.130, a formal hearing to review the suspension and cancellation of Compound 1080 was held by EPA in 1982. On October 22, 1982, Administrative Law Judge Spencer T. Nissen issued his recommendation on the use of Compound 1080. This recommendation was that new evidence justifies modifying the 1972 cancellation order to allow the restricted use of Compound 1080 in toxic collars and the SLD baits.

This recommendation is currently in the Administrator's Office for review. The recommendation can be accepted or amended by the Administrator. If Compound 1080 does become available as a predacide in New Mexico and Texas, it will be an additional control method to control coyote depredation of livestock.

RADIATION

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RADIOLOGICAL EMERGENCIES

Radiological emergencies may result from a release of radioactivity from major nuclear facilities such as nuclear power plants, other nuclear fuel cycle facilities, major research facilities, or military installations. They may also result from smaller nuclear facilities such as hospitals or facilities using radioisotopes in industrial or research applications or from transportation accidents.

State and local government officials have the primary responsibility for protecting the public during a radiological emergency. State and local jurisdictions, as well as operators of major nuclear facilities, should have compatible radiological emergency response plans that have been coordinated and tested.

It is not practical for State and local governments to maintain massive response capability, but they must be prepared to respond during the first few hours of a radiological emergency. Federal assistance will probably be needed for emergencies that have the potential for significant off-site consequences or for those that extend over several hours.

The Federal Emergency Management Agency (FEMA) coordinates the overall offsite Federal effort to assist States with nuclear emergencies. The Nuclear Regulatory Commission monitors actions taken by its licensees during emergencies and provides advice and assistance to the State or licensee as may be required or, in extreme circumstances, directs the licensee to take particular actions. The Department of Energy coordinates Federal radiation monitoring response under the Interagency Radiological Assistance Plan (IRAP).

Either under its independent authority or under the auspices of IRAP, the EPA may take a number of actions. It assures the safety of public drinking water supplies in States which have not accepted primacy under the Safe Drinking Water Act or when it concludes that States have not taken the necessary actions. Also, EPA may assist State and local governments in environmental monitoring, consequence assessment, and protective action decisions. These services may be provided at the request of a State (provisions for such consultation or assistance are usually included in State or local emergency plans) or EPA may respond to an accident without being requested.

RADIOLOGICAL EMERGENCY RESPONSE PLANS

Following the accident at the Three Mile Island Nuclear Plant in 1979, Federal Agencies have greatly increased the emphasis to planning, and

annual exercising of plans, for responding to radiological emergencies at nuclear power facilities. Figure 1 shows the locations of all such facilities in Region 6. Also shown are the emergency planning zones out to 10 miles which are subject to evacuation, and the zones out to 50 miles which may require lesser controls to prevent longer-term problems such as from ingestion of contaminated food or water. Note that a facility at the Miss./La. border has emergency planning zones that extend into La., so requires planning by La. and affected local governments, as well as annual exercises of the plans.

Table 1 lists the status and key dates of State and local plan development, and plan exercises.

PART II: SIGNIFICANT ENVIRONMENTAL PROBLEMS

URANIUM MINING AND MILLING IMPACTS

Extensive uranium mining activities have been carried out in Region 6, mainly in New Mexico and Texas. This activity was hardly regulated at all, compared to the milling industry, and its impacts have recently been questioned. EPA is currently nearing completion of a study to Congress assessing these impacts. EPA has studied and located off-site contamination from these activities, and further activities await the results of more detailed follow-up analysis. Some remedial activities will probably be indicated.

Some dozen or so uranium mills have operated in Region 6, about half of which have been shut down. The remaining mills are in various stages of operation because of the current depressed state of the industry. EPA has promulgated standards for cleanup and disposal of tailings from the inactive mills, and the DOE is actively planning and performing remediation activities. Standards for active mills will be promulgated by the end of FY-83.

NATURAL RADIOACTIVITY

Man's activities are introducing large quantities of natural radioactivity into the accessible environment. In most instances, natural dispersion processes quickly dilute the concentration so that the levels of radiation become indistinquishable from natural background levels. There are a few activities, however, that result in a buildup and concentration of radioactivity and a potential health impact. Examples include; 1. concentration of radioactivity in process waste streams, as in fossil fuel ashes, phosphate wastes, etc., 2. the use of certain waste byproducts containing radium for domiciliary construction materials, 3. disposal of waste produced brines containing radium, 4. radon releases by household uses of certain groundwaters, and 5. radon from unvented space heaters.

Of all such activities, by far the most significant are thought to be those that increase radon and radon daughter concentrations in living areas. This problem is highly sensitive to energy conservation activities which reduce the air change rate. The full extent of the indoor radon impacts is not known very well because of the very difficult and time consuming measurements needed to evaluate individual residences. A pilot program is underway in New Mexico, with EPA assistance, and State Radiation Control Program directors are in general agreement that this problem deserves additional study. The extent of corrective measures needed is highly dependent on the results of such a study, and cannot be meaningfully assessed at this time.

HASTINGS RADIOCHEMICAL

Several contaminated areas were left behind in Brazoria and Galveston Counties, Texas when the company moved away in the early 1970's. Since that time the Texas Department of Health has studied the contaminated areas and potential impacts, and has initiated legal action to force the company to remediate the problem. These efforts have been hampered by the lack of legally enforceable or Federally approved criteria for the major contaminant involved, cesium-137.

EPA's Office of Radiation Programs (ORP) has recently agreed to provide technical assistance to the State of Texas in their efforts to determine suitable limits for release of cesium-contaminated soil. These assistance activities are being performed by staff of ORP's Las Vegas Facility, in coordination with Region 6, and have only recently (December 1982) begun.

In addition to cesium-137, radium has been detected at one of the contaminated sites. Since radium is not excluded under CERCLA, the possibility of listing under Superfund is being investigated by the TDOH.

Table 1-Status of Radiological Emergency Response Planning at Fixed Nuclear Facilities in Region 6

State	Facility	Status
AR	Arkansas Nuclear One	Operational
LA	River Bend	Under Construction
	Waterford 3	Near Operational Status
	Grand Gulf	Under Construction
TX	Comanche Peak	Under Construction
	South Texas	Under Construction

Plan	Review	Test	Status
Arkansas	8-80, 1-81	-	Federally approved
AR Nuclear One	1-81	10-80, 3-81 5-82, 3-83	Federally approved
local plans	1-81	3-81, 5-82 3-83	Federally approved
Louisiana	5-81	-	Federal approval imminent
River Bend local plans			
Waterford 3		7-83 (projected)	
local plans		7-83 (projected)	
Grand Gulf (local plans only)		11-81, 1-83	
Texas	7-82		Not yet submitted for Federal approval
Comanche Peak		11-83 (projected)	
local plans		11-83 (projected)	
South Texas local plans			

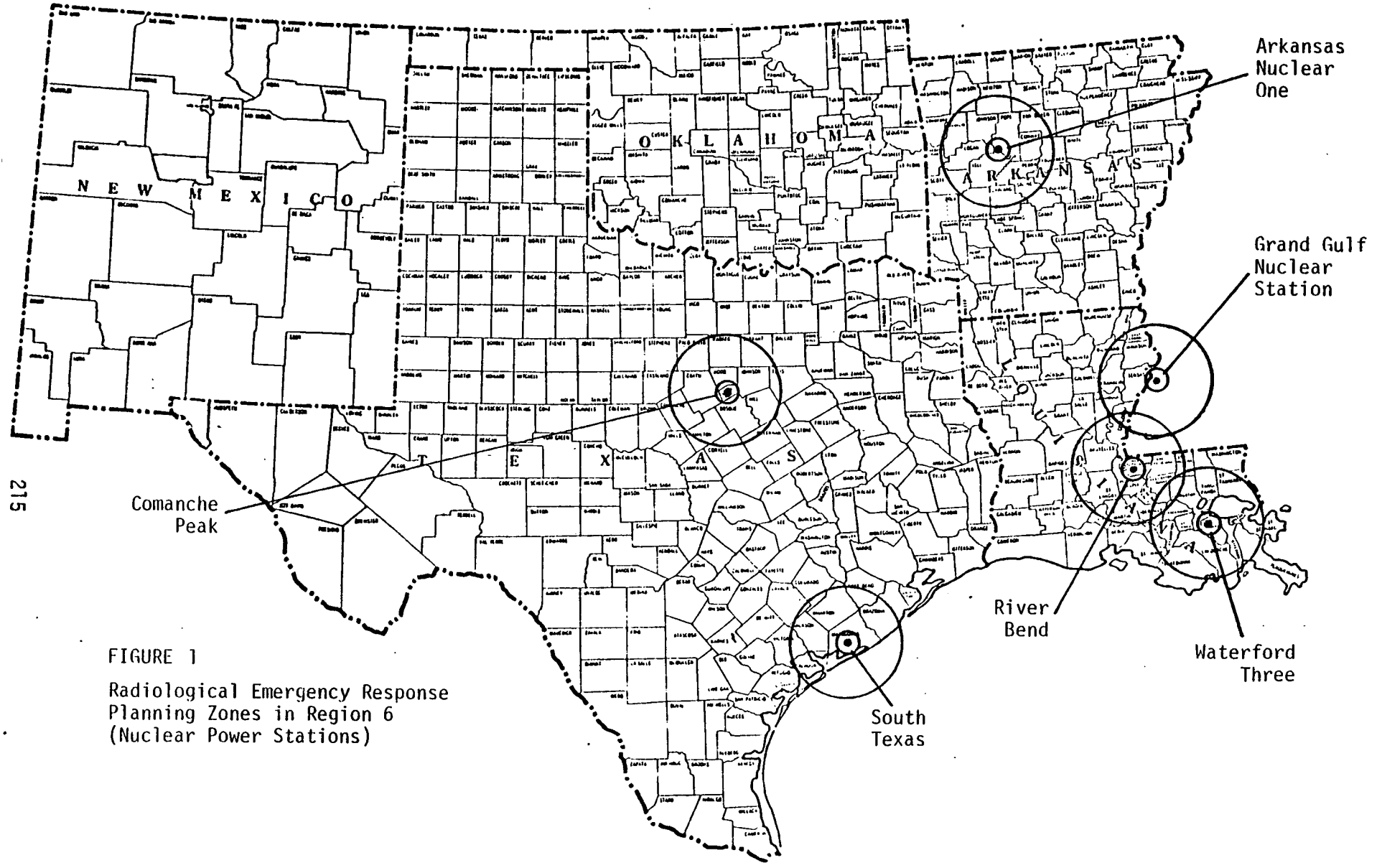

FIGURE 1

Radiological Emergency Response Planning Zones in Region 6 (Nuclear Power Stations)